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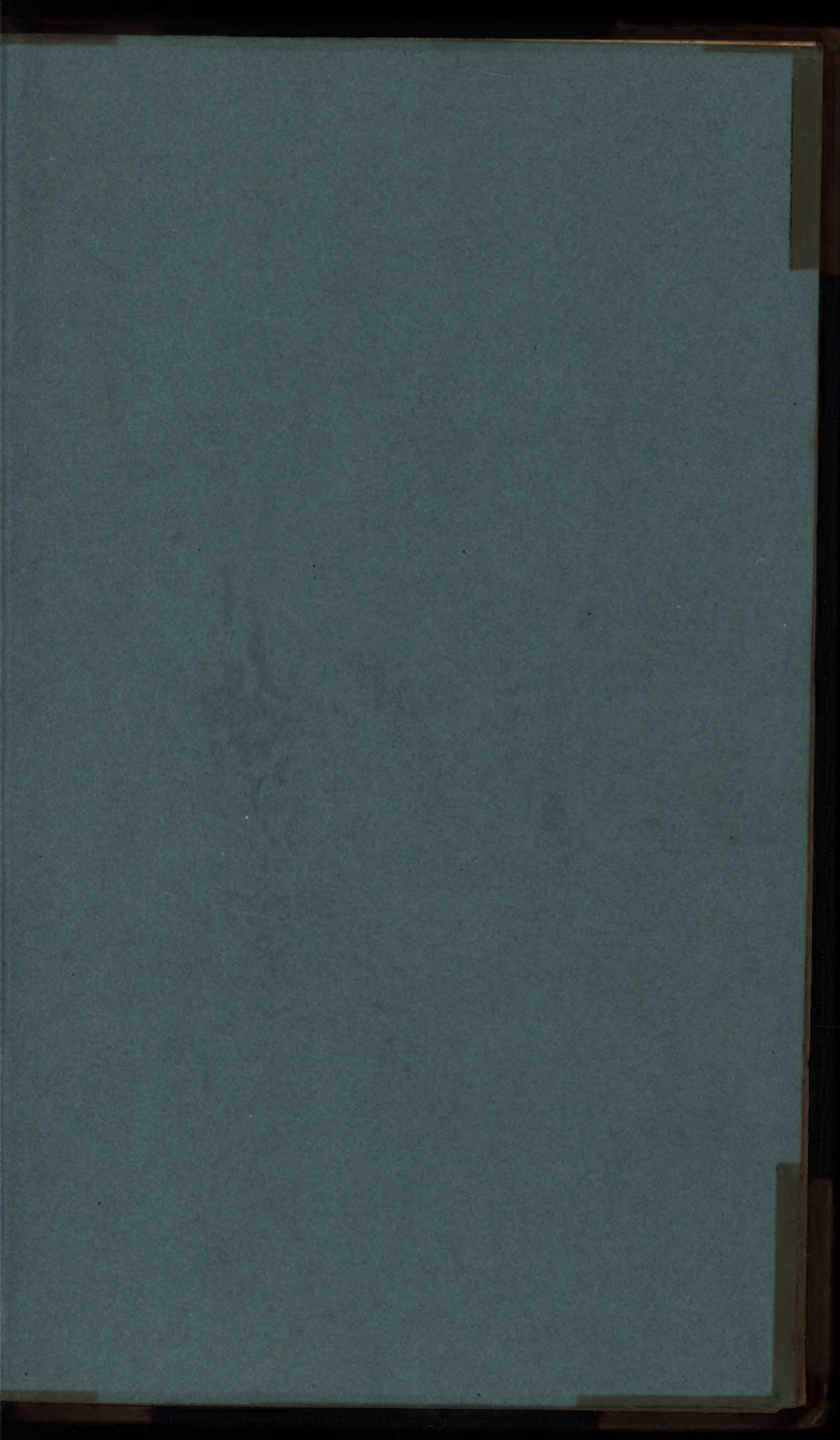
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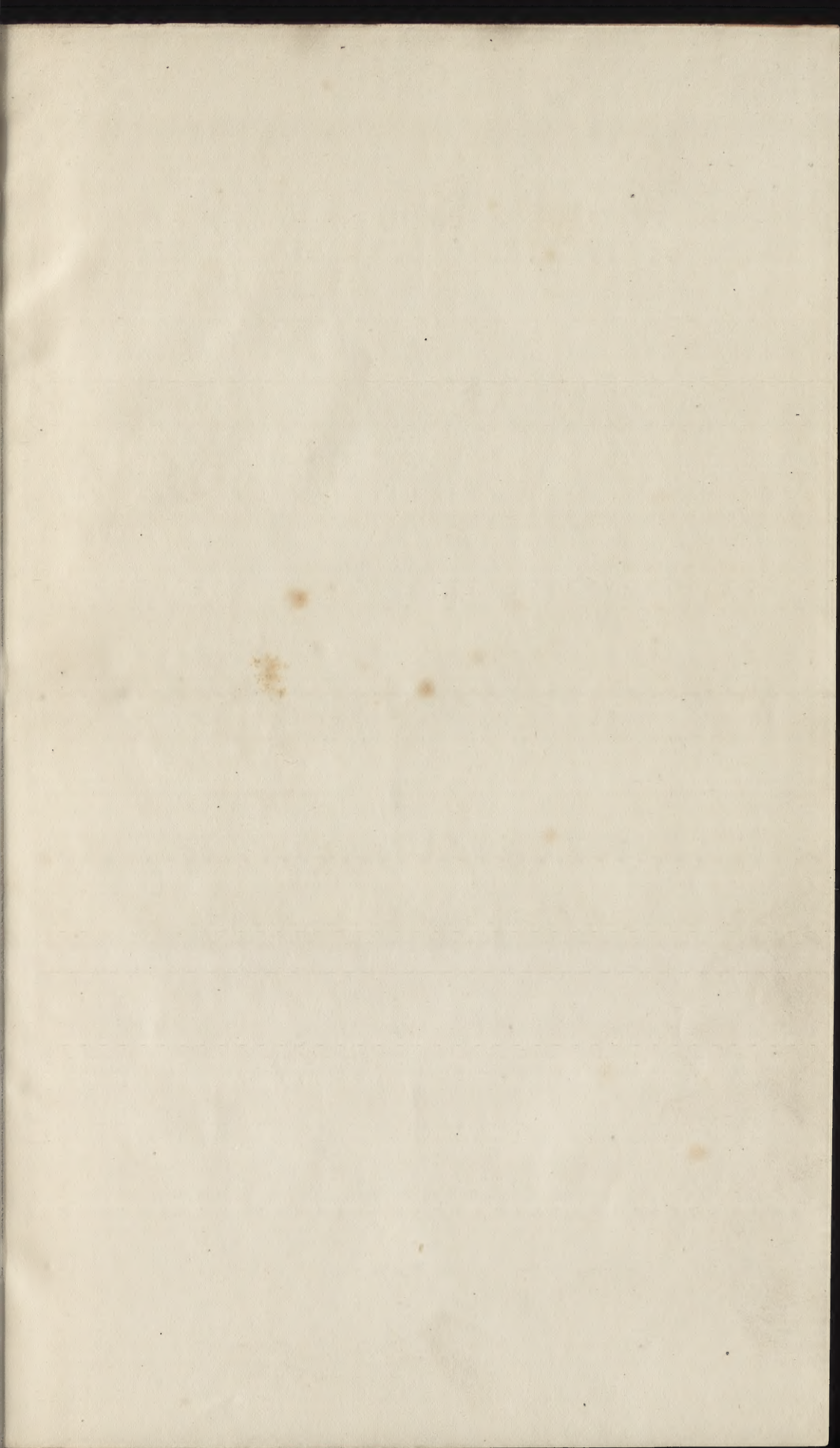
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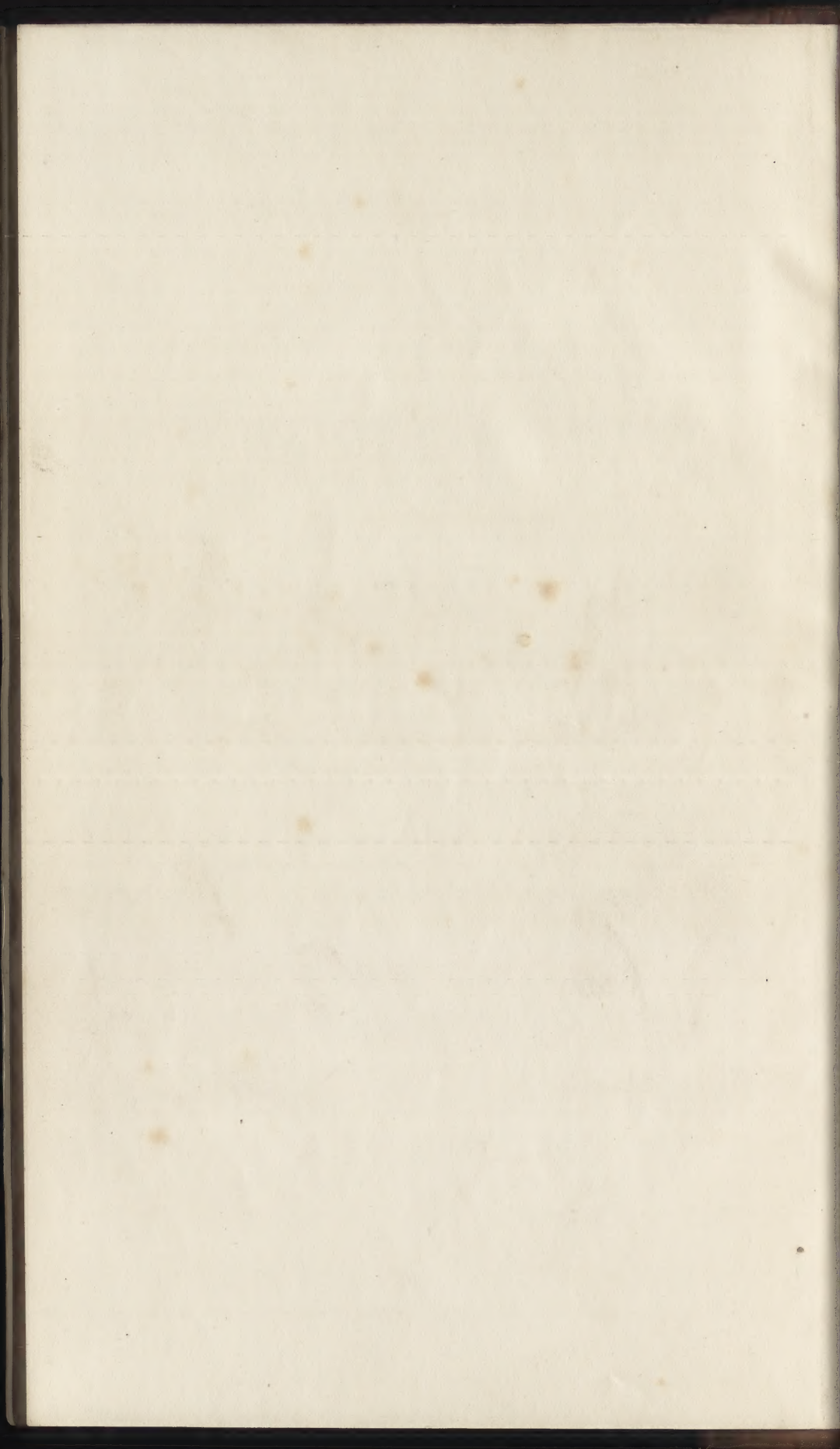
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ESSAYS, &c.

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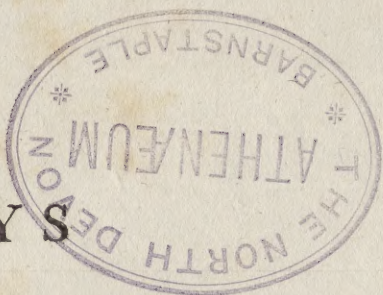
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21

ESSAYS



OF THE

LONDON

*ARCHITECTURAL SOCIETY.*

WITH FOUR PLATES.

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## P R E F A C E.

IF the antiquity and utility of a science are proofs that it deserves the public attention, the claims of architecture are very strong. These alone, however, whatever value they may stamp upon it, cannot entitle it to a place among the liberal arts. In these, its pretensions must be estimated from the character of which its productions are susceptible, and from the emotions they may be capable of exciting; and if the solemn grandeur of a Gothic cathedral produce a very different effect on the mind from the gay elegance of a well arranged modern drawing-room; if the one at all dispose us to be pensive, and the other to be

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cheerful; if, further, either the first, or any other building, be at all capable of producing such a state of mind, as to induce us to attend more readily to the precepts of morality, or to the sacred truths of religion, architecture will rank as high among the liberal as among the mechanical arts. That it, in an eminent degree, combines the advantages of both, is its peculiar boast.

In England, architecture has been considered rather as a trade than as a science. The public buildings, in which it has had opportunity to display itself, have been comparatively few; and it has perhaps been imagined that, in the usual practice of house-building, the accomplished architect has little advantage over the mechanical builder. Yet surely, in construction and in arrangement, superior science must afford some advantages; and it ought to be remembered, that



that it is only by the union of taste and knowledge, that economy can produce simplicity, or expence be well directed to attain magnificence.

Among the institutions so liberally established in this city, there is not one which has appeared calculated for the encouragement of architecture. The feeble protection afforded by the Royal Academy can hardly be deemed an exception. The lectures have long ceased ; and medals privately distributed, and the use of a library for a few hours one day in the week, at a time when it is hardly possible for a student in architecture to attend, and that interrupted by long vacations, cannot be deemed of much value. To the Dilettanti Society the science must acknowledge great obligations, in pointing out to us the beauty of ancient art ; and the

the Antiquarian Society has a similar claim upon our gratitude; but neither of them undertakes to assist us in the application of the knowledge which may be gained from their publications to modern uses; and the few clubs which have been formed by persons in the profession, are rather to enjoy the pleasures of good fellowship among men engaged in the same pursuit, than for the advancement of the art.

Influenced by these considerations, a few gentlemen have united themselves into a society, under the name of THE LONDON ARCHITECTURAL SOCIETY. They propose to improve one another, and they hope to improve the science, and have consequently adopted such rules as they thought best calculated to promote these purposes.

The Essays, which the ordinary members are required to furnish, will,  
it



it is hoped, excite a spirit of inquiry and accurate observation, and induce each author to make himself more fully master of the subject than he perhaps otherwise ever would have been.

The Designs will oblige him to exert his powers in invention, and the observations which must accompany them will force him to think what he is about, and to reject incongruous ornaments and useless members. The discussing these designs in the Society will evidently tend to fix the principles of composition, and all together will, in a degree, give to each member the advantages of the taste and experience of the others,

Observing that the delay and uncertainty of the publications of other Societies have frequently operated as a check to the production of useful and interesting papers, they have intro-

duced a rule in their code, for the annual publication of those essays which appear to them most worthy of notice. This little volume contains a selection from their first year's labours; and if its reception should indicate the favorable judgement of the Public, it will encourage them to proceed with increased ardor; if, on the contrary, their book should not meet with a flattering reception, they will not be disheartened, but strain every nerve to produce a better next year. .



R U L E S  
OF THE  
LONDON ARCHITECTURAL SOCIETY ;

*Instituted 1806.*

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I. THE Society shall consist of a President, four Vice-Presidents, a Treasurer, Secretary, Members in Ordinary, and Honorary Members.

II. The President and Treasurer may be elected from the members in general, but the Vice-Presidents and Secretary shall be chosen from the ordinary members. The above officers to be annually elected by ballot, and to serve without fee or reward.

III. The ordinary members consist of those gentlemen who engage to produce designs and essays, according to Rules X and XI, and to these shall the whole property of the Society, as vested in the Trustees, belong. The honorary members are not required to produce any such designs or essays, nor shall they be subjected to any fines for non-attendance at the Meetings of the Society.

IV. All the members shall have an equal vote in every transaction of the Society, and equal right to the present use of its property.

V. The Subscription demanded from every member shall be Two Guineas annually, to be paid in advance at the last meeting of the preceding session.

VI. No member shall have the right of voting, or the use of the Society's property, who has neglected his subscription according to the preceding rule; and if any member shall neglect to pay his annual subscription for two years after it has become due, he shall be liable to ejection from the Society.

VII. The Meetings of the Society shall be held once a fortnight, on Friday evening, at half past seven o'clock precisely, from the last Friday in October to the first Friday of meeting in May, inclusive; at all which meetings the President, or one of the Vice-Presidents, or in case of their absence any member appointed by the gentlemen present, shall take the chair, regulate the business of the evening, and read the communications. The Secretary also, or, he not being present, a member appointed in his place, shall read the minutes of the preceding meeting, and then note the members present. He shall afterwards present communications, and take minutes of the present meeting, with the fines incurred and received. Other business transacted at the Society's meetings will be to discuss the designs, observations, and essays before it; in which all persons present may take a part.

VIII. Every ordinary member who shall be absent on two successive nights of meeting at the time of noting the members present, shall incur a fine of five shillings, and also five shillings for every additional night of absence, unless prevented by illness, or a distance of more than ten miles from the place of meeting.

IX. Any



IX. Any day of meeting, or any other day during the session, may be appointed and declared as a special day for the consideration of extraordinary or important matter, upon a requisition signed by four members, and made to the President or one of the Vice-Presidents; and notice of such special meetings shall be sent by the Secretary to each member; the requisition, during the interval, being placed in a conspicuous part of the Society's room.

X. Every ordinary member shall produce annually, according to a rotation and time agreed on, an Architectural Design never before in any way made public, consisting of at least one plan, elevation, and section, and accompanied with observations critical and explanatory, (without which no design can be accepted,) under the forfeiture of two guineas,

XI. Every ordinary member shall also produce annually, in the agreed order, an Essay on some subject connected with civil architecture, or forfeit half-a-guinea.

XII. The Designs and Essays delivered shall remain the property of the Society; who shall publish annually a selection of such Essays as a committee, appointed for that purpose, shall think deserving of public notice. The author of each Essay inserted shall be presented with two copies of the volume, and every other member shall be entitled to purchase a set of the publication at prime cost. The same rule shall be observed if the Society publish any selection of the Designs.

XIII. All fines incurred shall be demanded by the Secretary at the first opportunity; and any member neglecting or refusing to pay his fines on demand shall be subject to the first, and if he neglects or refuses to pay them

them during two years, to the second of the penalties mentioned in Rule VI.

XIV. All the subscriptions, fines, and other receipts shall be paid to the Treasurer, who shall keep accounts of the same, and make all the disbursements required for the use of the Society. The Treasurer shall attend at the last meeting of each session, and produce receipts for all sums above two pounds, together with his accounts, which shall on that day be finally adjusted and closed, the balance in hand (if any) carried forward to the account of the next session; and the current accounts, being audited and passed, shall be signed by the President, Secretary, and at least three members. The Treasurer shall not pay any sum above ten pounds without an order of the Society signed by the President, or a Vice-President, and three members.

XV. The funds of the Society shall be appropriated to defraying the necessary expenses of meeting, to the purchase of books, prints, articles of furniture, the publication of the Essays, and to such other purposes as the Society may judge proper.

XVI. A committee of the ordinary members shall be annually elected to direct the expenditure of the Society.

XVII. On the last night of every session no design shall be exhibited, or Essay read; but, the accounts of the year being closed, the Society shall proceed to elect all the officers for the succeeding session. The elections to be performed by ballot, each member delivering his list, folded up, to the President, Vice-President, or such other person as may be in the chair; who shall appoint  
three



three scrutineers to examine the list and declare the officers elected.

XVIII. Every candidate for admission into the Society shall be proposed and recommended by two members, who shall deliver to the Secretary a paper, specifying the name, place of abode, and addition of the person recommended. This paper being read, shall be suspended in the Society's room, and at the second meeting after that at which the proposal is made the candidate shall be balloted for; and if three-fourths of the members voting ballot in his favour, he shall be deemed a member of the Society, upon payment of the subscription, together with whatever entrance-money it may be thought proper at some future period of the Society to demand, and subscribing the book of Rules and Orders.

XIX. Any member may be expelled from the Society, sufficient cause having been assigned, and a motion for that purpose made and seconded, which shall be entered on the minutes, a notice of it suspended in the Society's room, and a copy sent to the objectionable member. The motion shall be again proposed at the second meeting afterwards, and then put to the vote; and if three-fourths of the members present and voting determine in favour of the motion, it shall be carried in the affirmative, and the person who is the object of it shall cease to be a member of the Society.

XX. Any member shall be at liberty to withdraw from the Society, upon signifying his intention in writing to the Secretary.

XXI. No proposition shall be made for altering or repealing

repealing any Rule or Order of the Society until the same shall have been in force at least three months.

XXII. No new rule shall be made, nor shall any old one be altered or repealed, without the concurrence of two-thirds of the members present and voting at a meeting subsequent to that at which such new rule, alteration, or repeal was proposed; and such new rule, alteration, or repeal, must be confirmed at a future meeting by a majority likewise consisting of at least two-thirds: after such confirmation it shall be considered as a rule and order of the Society.

XXIII. Any proposition for the above purposes, after having been rejected, shall not be renewed until the expiration of three months from the time of such rejection.

XXIV. In all dubious cases the person in the chair shall have a casting vote.

XXV. Every member shall be allowed to introduce one stranger to any meeting of the Society, except the last in each session and all special meetings, on giving his name to the Secretary.

XXVI. Any member losing or injuring any of the Society's property shall be bound to make good the damage.

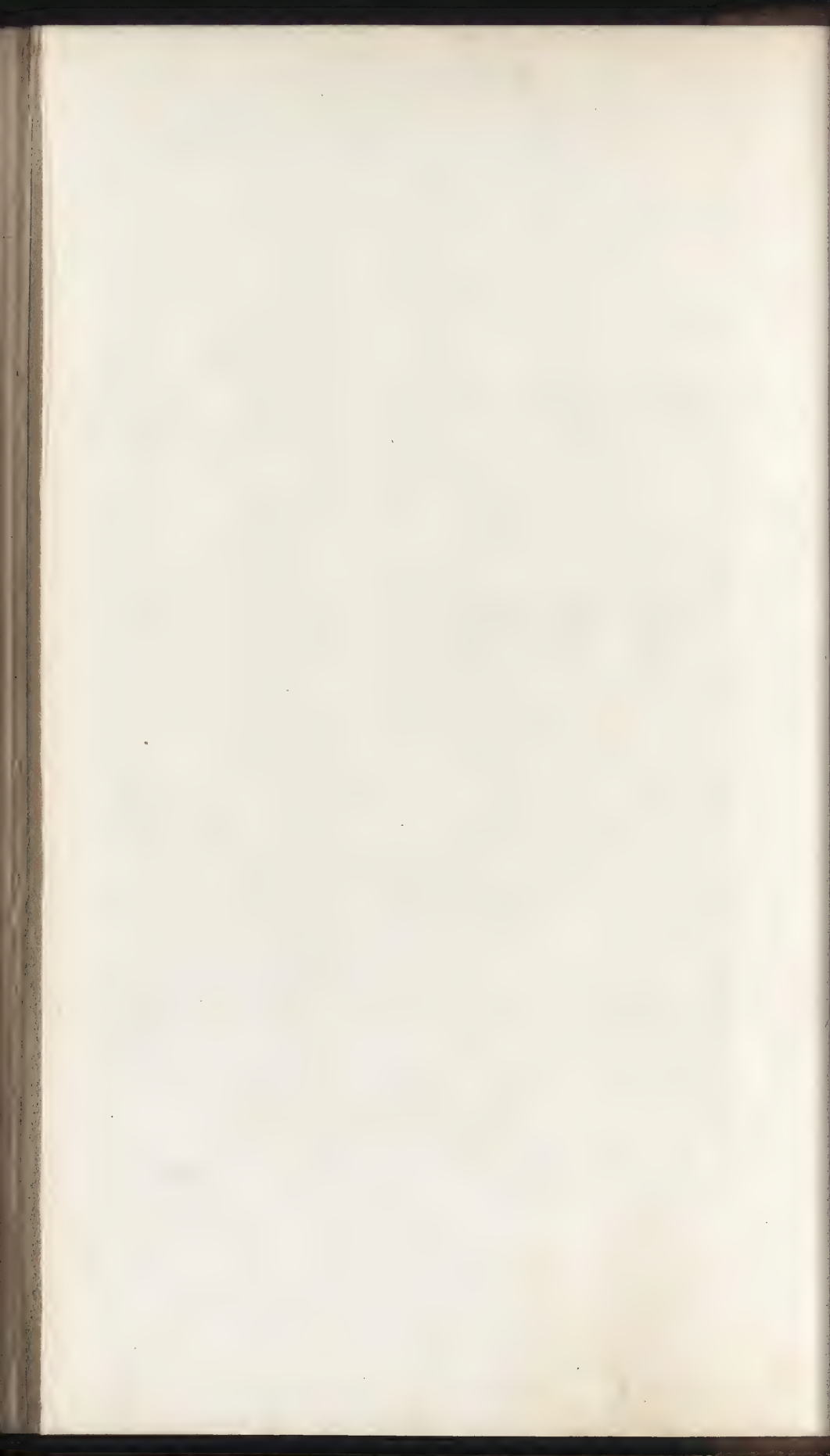
XXVII. The whole of the Society's property and effects, of what kind soever, shall be vested in four Trustees: and whenever their number shall be reduced, an extraordinary general meeting shall be held for the purpose of filling it up.



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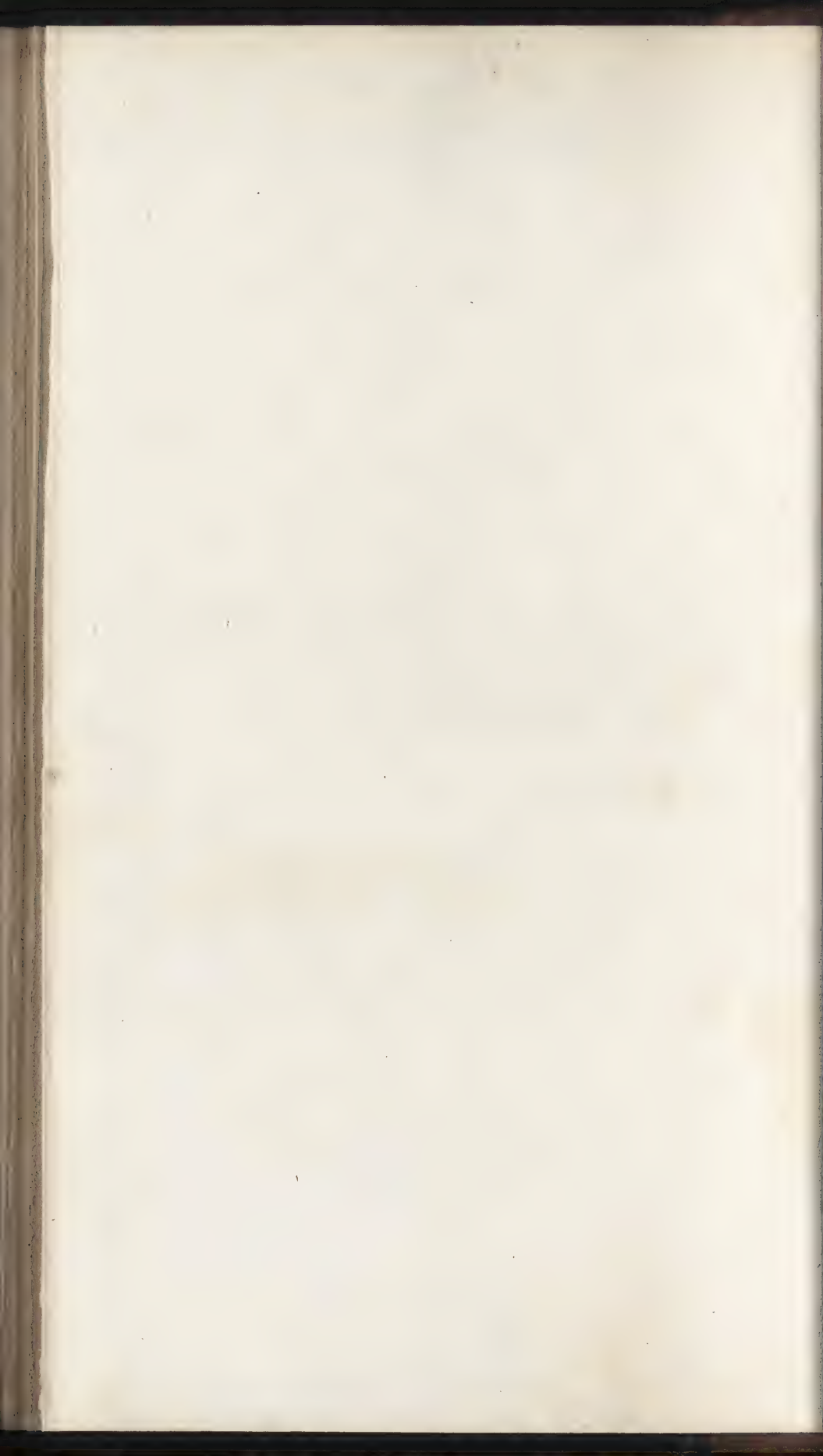
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AN ESSAY  
ON  
MODERN ARCHITECTURE,  
By EDMUND AIKIN.

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PART THE FIRST.

*Read October 3, 1806.*

THE subject proposed for consideration in the following Essay, is *Modern Architecture*, or that style of building, which founded on the imitation of the remains of Roman antiquity, took its rise with the revival of literature and the fine arts in the fourteenth and fifteenth centuries; and gradually, but finally, prevailing over the Gothic style, has for a considerable period been established throughout the countries of Europe. To compare ancient with modern architecture, to examine how far the latter has been successful in its imitation, and what are its characteristic defects, appears to me an interesting subject, and one which has not engaged the attention which it merits.

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The

The comparison of the different styles will render it necessary to take somewhat of a historical view of architecture, to analyse its principles, and trace the change which it has undergone. I have no pretensions to assume the tone of a professor before the present audience ; nor do I wish to give a formal detail of facts familiarly known to those I address, but I must claim their indulgence in attending to that rapid glance which will be necessary to render intelligible the subsequent critical observations.

In considering the buildings of antiquity, and particularly of Greece, the first circumstance that strikes us is their extreme simplicity and even uniformity. The temples of Greece were invariably quadrilateral buildings, differing only in size, and in the disposition of the porticos ; which either ornamented the front alone, or surrounded every side with their beautiful and shady avenue.

The system of Grecian architecture is founded on the simple principles of wooden construction ; a quadrangular area is enclosed with trunks of trees, placed perpendicularly, with regular intervals ; these support lintels, upon which rest the beams of the ceiling, and an



an inclined roof covers the whole. Such was the model when, touched by the hand of taste, the post and lintel were transmuted into the column and entablature, and the wooden hut into the temple.

It appears probable that the earliest Greek temples were really of wood, since so many of them were consumed during the invasion of Xerxes; and that large and magnificent edifices were sometimes composed principally of this material, is rendered evident by the example of the temple of Jerusalem, which was surrounded with columns of cedar. But builders soon adopted the more noble and durable material of stone; and though the general system of architecture was already established, its forms received some modifications, by being thus, as it were, translated into a new language.

A wooden lintel, from its fibrous texture, possessing considerable tenacity and strength in proportion to its weight, it was practicable to form very wide intercolumniations; thus, we are told by Vitruvius, that the antient Tuscan temples were constructed with wooden architraves. Stone, on the other hand, of a granular composition, and of great specific gravity,

would break by its own weight, in a bearing where a timber beam would be perfectly secure. When therefore porticos were erected of stone, it was necessary, in order to ensure solidity, to contract the distance between the columns to very narrow limits. A wooden edifice, never secure from the injuries of accident or violence, presented no motive for any great solidity in its construction. But in stone it is possible, as the energetic industry of the ancient Egyptians has demonstrated, to defy the injuries of time, and almost the violences of rapine. The architect who builds in stone may build for eternity ; and this idea will give a motive for that grand and massy solidity so essential to the sublime of architecture. These circumstances led to the perfection of the Grecian style ; the original model secured simplicity of form and construction, while a superior material preserved it from the meagreness attendant on wooden building.

Thus arose the Doric, or as it might be emphatically called, the Grecian order, the first-born of architecture, a composition which bears the authentic and characteristic marks of its legitimate origin in wooden construction, transferred to stone.

Contemplating a capital example of this order,

order, as for instance, the Parthenon of Athens, how is our admiration excited at this noblest, as well as earliest, invention of the building art ! What robust solidity in the column ! What massy grandeur in the entablature ! What harmony in its simplicity, not destitute of ornament, but possessing that ornament alone with which taste dignifies and refines the conceptions of vigorous genius : no foliage adds a vain and meretricious decoration, but the freize bears the achievements of heroes ; while every part, consistent in itself, and bearing a just relation to every other member, contributes to that harmonious effect which maintains the power of first impressions, and excites increasing admiration in the intelligent observer. So in the immortal statue of Glycon, the form of heroic vigour is crowned with beauty, dignity, and grace. Other orders have elegance, have magnificence, but sublimity is the characteristic of the Doric alone.

Fluting the shafts of columns is a practice never omitted in any great and finished Grecian work ; it therefore seems probable, that it had some relation to the original type, perhaps the furrowed trunk might suggest the idea ; it is however, a beautiful ornament which is applied



with equal happiness to break the otherwise heavy mass of a Doric shaft, or in the other orders, to obviate an inconsistent plainness.

The invention of the Ionic and Corinthian orders, enlarged the bounds of architectural composition, and completed its powers of expression.

The Romans borrowed their architecture from Greece, but practised it with some peculiarities of manner and taste. In reviewing the most favourable period, and the best examples of Roman architecture, we find in addition to the square plans of the Greeks, circular temples, crowned with domes. The Corinthian was the favourite order at Rome, and as far as existing examples enable us to judge, the only order well understood and happily executed. Thus practising the art as imitators, and further removed from the original type, with less severity of taste than the Greeks, the Romans formed a style of magnificence, which always possessed grandeur, and in their best works, was combined with taste and simplicity.

In considering the architecture of the period under contemplation, one circumstance remarkably attracts attention ; that while such is the variety of general and particular proportions

tions of the forms of mouldings and members, that it is impossible to name any two examples of an order which agree in all respects, so that it is evident that the fancy of each artist directed these particulars : this exuberant fancy was so well restrained within reasonable limits, that the whole collection of columns may be resolved into three characteristic orders. Having three expressions, the strong, the elegant, and the rich, they knew that this was all that architecture could say distinctly, and any intermediate shade would but weaken and confuse her language. The character of the three orders being firmly established, and clearly marked by strong and general features, the details were ordered by the taste of each practitioner, and in those happy times taste was the birthright of almost every artist.

Of what nature were the systems of architecture of the Greeks, is a question which naturally presses on our curiosity when we hear of the written works of a long list of architects, whose names alone survive in the works of Vitruvius. The authority of the last-mentioned author I am not inclined to rank very high, as his precepts are in general contradicted by extant remains ; we may however conclude,

from his manner of teaching the art, that the ancients proceeded on very different principles in the execution of the orders from the moderns. Thus Vitruvius directs us to vary the proportion of the members according to the magnitude, situation, purpose, and other circumstances of the building; while modern authors offer no rules of that kind, but prescribe a certain fixed modulation of the parts of each order, to be used in all edifices, however circumstanced, each author recommending such as his peculiar studies have occasioned to make a favourable impression on his mind. The columns of areostyle temples, says Vitruvius, are eight diameters in height; those of a diastyle intercolumniation, eight and a half; those of systyle, nine and a half; of pycnostyle, ten; and of eustyle, eight and a half; and these he directs without any modification for the different orders, though in a subsequent part of the work, each order has its particular proportions assigned. That the ancients were also guided by minute optical considerations, is rendered probable by another passage respecting the diminution of columns, which is directed to be varied according to their altitude; thus, in a column of fifteen feet high, the diameter at the bottom is to be divided into



six parts, and five given to the diameter at the top; if the column is from forty to fifty feet in height, the bottom diameter is to be divided into eight parts, and seven given to the top. Several intermediate proportions are mentioned, and if it is still higher, the same principle is to be observed. The reason assigned for this is, that as a greater height causes the column to appear more diminished, this appearance is to be corrected by an additional thickness, beauty being the province of the eye, which if not satisfied by the due proportion and augmentation of the members correcting apparent deficiencies with proper additions, the aspect will appear coarse and displeasing.

The columns at the angles of the porticos are also directed to be made one-fiftieth part of a diameter thicker than the others, because they being more surrounded by the air, will appear slenderer, and the deficiencies of the sight must be rectified by the judgment. This last practice is confirmed by the example of the temple of Minerva at Athens. In another part, Vitruvius gives an extraordinary direction, for which it is not easy to conceive a reason; that the columns of the side porticos of a temple should be so placed, that the inner line of the shaft may be perpen-

perpendicular, thus leaving all the diminution on the outside. This is observed in the temple of Vesta at Tivoli, and perhaps in no other antique example.

In contemplating the progress of Roman building, we shall find the introduction of arches operating an essential change in the forms and principles of architecture. This was the noblest improvement in the art of construction, an invention which enables man to bridle the mighty river, to raise in the skies the self-balanced pile, and cover with the pensile vault the vast area of a temple of all the Gods. But it may be doubted whether the arch, though enlarging the powers of construction, has not, in fact, been injurious to architecture, considered as a fine art. Grecian architecture, as it has been before observed, is founded on the forms and proceedings of wooden construction, whence it acquired that inestimable simplicity which satisfies the judgment, and attracts with increasing admiration the eye of taste. The arch, on the other hand, may be said to be the natural style of stone building, and thus this invention introduced a new and inconsistent principle of imitation, causing a confusion of ideas both in system and practice.

Some

Some of the Roman buildings which exhibit marks of the deterioration of taste alluded to, are the following: Vespasian's Temple of Peace, where a vault of groined arches, a figure in itself ugly and ignoble, is supported at the springing of each groin by a single Corinthian column, a support as meagre and inadequate in consideration of the vault, as the application of it is inconsistent. In the Theatre of Marcellus, and the Coliseum, we find several stories of arcades, while the intermediate piers are ornamented with engaged columns; thus the order, instead of forming an essential part of the construction, is degraded to an idle and ostentatious ornament. The Coliseum, though imposing from its mass, and general simplicity of form, is very deficient in detail, and the Theatre of Marcellus, though erected in the Augustan age, exhibits an example of the Doric order entirely deprived of its characteristic grandeur. The triumphal arches rather belong to sculpture than architecture, and are therefore scarcely amenable to the rules of the latter art, otherwise they would be liable to similar objections.

Together with the other fine arts, though not exactly with equal steps, architecture declined in the Roman empire; while the principles



ciples of the art were neglected or forgotten, the execution progressively barbarized. The vast palace of Dioclesian at Spalatro, shews the senility of architecture; disproportionate intercolumniations; pediments, of which the horizontal cornices are suppressed; arches springing immediately from columns; fantastic corbels, which in defiance of the rules of solidity, support columns;—in these abuses we trace the final degradation of Grecian architecture.

From this time commences the age of spoliation; impudent compilers of fragments, the barbarous builders of that period have but perpetuated their own ignominy. Constantine was the first of these depredators; he ruined the Arch of Trajan, to decorate his own with its inappropriate ornaments, and erected his Basilicas with columns from the Mausoleum of Adrian.

In this confusion of ideas and practice, we may observe a certain characteristic style which marks the age. The builders, deficient in skill, adopted a certain hasty and compendious mode of construction, which influenced the forms of architecture; rejecting architraves, which requiring large and unwieldy masses of stone, were beyond their power and ability to manage,  
they

they substituted arches, which springing from the columns, supported the superstructure. The ornamental parts, being generally either wholly or in part taken from preceding edifices, presented great incongruities of execution, and disgraced the rude workmanship of those ages. Taste in decoration and execution, was a quality wholly wanting, but yet, whether it were the example of antient edifices, the want of fancy, or real judgment, the plans and general forms preserved somewhat of a grand and venerable simplicity.

I wish not to trace the deteriorating progress of architecture in the lower ages, and how it sunk into that corrupt and degraded style, which under various names, as *Il Gotico Tedesco* in Italy, and the Saxon and Norman in our own country, prevailed with various changes throughout Europe. This manner is undoubtedly the worst of all architectures; heavy in construction, and abandoned to the clumsiest caprices of the mason in ornament. The pillar, the semicircular arch, the plain, or the plain groined vault, are its elements.

The style of pointed arches, or that which is called Gothic architecture, succeeded. This term, though originally absurd and injurious,  
has

has been so long confirmed by usage, that it will be convenient to retain it, especially as no unexceptionable substitute has been offered.

The origin of the Gothic style of architecture is obscure, and on this head I shall not pretend to offer an opinion; but what it is in its perfection, what are its principles, its forms, its characteristics, are inquiries which will demand attention.

What callous imagination has entered an ancient cathedral without being awe-struck with the magic of its construction, and the grand original effect of its harmonious design?

Gothic architecture, while it is the opposite, is the not unworthy rival of the Grecian style: the arch and vault are the elements of its construction, pyramidal forms are its elements of composition.

The Gothic mode of construction is an ingenious compendium of building, economical in materials and labour. Rejecting heavy cornices, architraves, and lintels of all kinds, the builders had seldom occasion to use stones larger than a man might carry on his back, up a ladder, from scaffold to scaffold, though they had pullies and spoked wheels on occasion. Thus they were readily enabled to raise up their  
works



works to an extraordinary height, in which particular they appear to have placed great pride and emulation. Hence the lofty towers and spires; ambitious ornaments that tyrannise over the body of the building, and claim attention at the expense of those useful parts, to which they ought, but disdain to be subordinate.

The churches were arched over with groined vaulting, which threw the weight on the springing points, instead of distributing the pressure equally along the walls as is the case with a plain vault or ceiling; the points of pressure from the vaults were opposed by buttresses, and the intermediate spaces of the wall were thin, and occupied with windows. The vaulting was frequently ingeniously composed of a skeleton of hewn stone, and the interstices filled in with lighter materials.\*

The

\* Thus Mr. Price, in the description of Salisbury Cathedral, observes, that "The groins and principal ribs are of Chilmark stone, but the shell, or vaulting between them, is of hewn stone and chalk mixed, on the top of which is laid a coat of mortar and rubble, of a consistence probably ground in a kind of mill, and poured on hot while the lime was bubbling, because by this the whole is so cemented together, as to become all of one entire substance."

The machine of a Gothic edifice, consisting so essentially of vaults and arches, required great contrivance in balancing and sustaining their pressures ; this was effected by means bold, ingenious, but sometimes presumptuously insufficient. The genius of these architects had a tincture of extravagance, which led them to sacrifice always the apparent, and too often the real solidity of their buildings, to those picturesque and marvellous effects which captivate the imagination. Accordingly these edifices must not expect to rival the immortal constructions of Greece and Rome.

The pendants from the vaults are among the most pleasing and innocent of the plays of ingenious construction in the Gothic style ; but the attempt to substitute weight to buttment, generally observed in the middle aisles pillars of cathedrals, is a serious defect, which threatens the ruin of these venerable piles. On this account Sir Christopher Wren observes, that almost all the cathedrals of the Gothic form, are weak and defective in the poise of the aisles ; for while the arches of the nave are balanced and sustained by the flying buttresses, those of the side aisles, though firmly supported on one side by the external wall with its buttresses, have

on the other side no other butment than the pillars themselves, which, as they are usually proportioned, if they stood alone could not resist the spreading of the aisles one minute. True indeed, the great load above of the walls, should seem to confine the pillars in their perpendicular station, so that there should be no need of butment internally; but experience has shewn the contrary; and there is scarce any Gothic cathedral in which the pillars are not bent inwards by the weight of the vaulting of the aisles.

Hence it appears, that the method pursued in erecting these buildings was, to insert the springing stones as the work advanced, but to leave the vaults to be turned after the walls were carried up to their full height, and the whole roofed in.

The pointed arch has several advantages in construction over arches formed by one segment of a circle; it will rise with less centering, require slighter voussoirs, and less butment. The Gothic architects seem to have perpetually calculated the minimum of necessary resistance and solidity, and they displayed considerable skill in aggravating the appearance of boldness by the choice of materials; we have already



seen the light composition of their vaults, and on the other hand, they frequently used Purbec marble, a very hard and strong stone, for the slender shafts which had to support great weights. The roofs of Gothic building are very high pitched; a form more of choice than necessity, as they are generally covered with lead. These roofs are therefore faulty, in burdening the walls with an unnecessary load of lead and timber, and they are also defective in construction, by the omission of tye beams to counteract their tendency to spread and thrust out the walls.

Gothic cathedrals are of remarkable height and length in proportion to their width. The builders delighted to elevate and surprise the mind by extraordinary effects of hardy construction and eccentric design; they knew the effects of perspective, and the powers of contrast in altering apparent magnitudes; height and length were their elements of grandeur, to which the dimension of breadth was sacrificed.

By this departure from what are generally received as regular proportions, the eye is at once struck with the full magnitude of the edifice; while in a building of regular proportions,

tions, every dimension bearing its usual relation to other parts, there is no scale of comparison, and the mind is not at first aware of an extraordinary magnitude. This effect is remarked in the Basilica of St. Peter's; every part being colossal, the observer does not perceive the immense magnitude of the whole, till he compares it with some known standard.

To aggravate the appearance of height in a Gothic aisle, no cornices are admitted to break the altitude with their horizontal projection, but the eye rising uninterruptedly, shoots up with the pillar, and follows its ramifications in the spreading vault.

In an edifice on the Grecian or Roman construction, the windows are the mere requisites of convenience; in a Gothic cathedral they become the essentials of decoration. Large openings occupy every interval between the pillars, and this immense body of light which would otherwise glare offensively, is fancifully divided by mullions, and tempered into a rich harmonizing glow by the use of stained glass.

The Gothic style of building is essentially light and airy, and it only acquires its awful grandeur by real magnitude, and the "religious light" of painted windows.

Thus considering the Gothic mode in a general view, we find a system of bold and ingenious construction, producing a grand, consistent, and admirable style of architecture ; but this praise cannot be extended to the details and ornamental parts. The arch, as it is the element of construction, is made the foundation of decoration, and repeated in various forms and proportions to a most unmeaning excess. The smallest shrine is a miniature of the facade of a cathedral, and the eternal repetition of minute parts and frivolous ornament, rather confuses than enriches the effect. It must be allowed, that the outside of a cathedral is generally inferior in beauty to the inside ; the reverse of which is the case with a Grecian temple. The Gothic style of construction is adapted to produce a grand interior at the expense of the exterior, which frequently presents a huge pile of unconnected parts, picturesque, but not beautiful, a forest of buttresses, a collection of extravagant decorations, which spread over every part, leaves the eye no repose among the tawdry profusion.

END OF PART I.



AN ESSAY  
ON THE  
RISE AND PROGRESS  
OF  
**Gothic Architecture,**

By *SAMUEL BEAZLEY, Jun.*

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*Read December 12, 1806.*

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— Let my due feet never fail  
To walk the studious cloister's pale,  
And love the high embowed roof,  
With antique pillars massy proof,  
And storied windows richly dight  
Casting a dim religious light.

As in the History of the World we may observe one empire subverted by another—civilization succeeded by anarchy and confusion—and barbarism gradually refined into civilization; so, in the History of Science, may we perceive the different revolutions of taste; see one art succeeded by another; and mark the gradual

progress or diminution of all, according to the ever varying fancy of mankind.

That species to which the thoughts of this Society are peculiarly directed, has, from the earliest periods of knowledge made one of the most prominent features in the pages of science ; and from the mathematical genius, as well as the taste and judgment required in its pursuit, we find it to have engaged the particular attention of some of the greatest men in all ages, who have, by their abilities and learning, contributed to the advancement of an art that at once combines utility and beauty ; and their names have given it an additional lustre, which the utmost efforts of time may perhaps never be able to efface.

Among the many different styles of building that have by turns formed the standard of taste, and lent their aid in beautifying the cities of the earth ; that, which has generally been denominated the Gothic, though it can neither boast the antiquity or classic celebrity of the Grecian, is yet far from appearing a contemptible figure in the Annals of Architecture, both as to the elegance of its construction, and from the many admirable examples to be found in various European kingdoms ; particularly in several truly  
sublime

sublime instances in our own country, which stand as records of the taste and ingenuity of our ancestors.

To pursue this style of architecture to its origin—to explain the primeval causes of its introduction—and to trace it through the several stages of its progressive improvement, till arriving at nearly the utmost pitch of excellence, it was at once suddenly, and almost entirely abolished, has been the object of much abler pens than mine; nor could I, without more age and experience, ever hope to establish new opinions upon a subject, on which so many have been formed; my principal attempt therefore has been, to glean from the several Essays I have read, those ideas which appeared the most likely to be founded in reason, and which, together with some few observations on the buildings to which they have directed my attention, I hoped, might, by collecting various facts and opinions respecting a point so much in dispute, into a small compass, render my paper of some little utility, and perhaps lead those, who are so much more capable than myself of elucidating the subject, to produce a more accurate account than has yet made its appearance; though I must observe, that the ideas relative to the ap-



plication of the term *Gothic*, the *origin of the pointed arch*, and several others, were deduced from observation, and both conceived and written before I had seen any works upon the subject; but finding opinions, though not exactly agreeing, yet in some measure coinciding, and not meeting with others founded on sufficient authority to controvert them, I have been emboldened to adopt them in this Essay.

Some persons have attributed the introduction of this style of architecture to the Spaniards, from their so often employing Moorish architects; others, to the Italians, as being merely a corruption of the Grecian and Roman, through the progress of false taste; and a few, almost without an inquiry into the justice of their decision, have given the barbarians, whose name it bears, the credit of its invention.

That the scientific and mechanical knowledge of the Egyptians, should have enabled them to raise those immense structures that have contributed to render their country so famous, is not to be wondered at; nor is any doubt mingled with the admiration we feel at beholding the chaste simplicity of the Doric order, the light elegance of the Ionic, or the exquisite luxuriance and delicate proportions of the Corinthian,

rinthian, when we consider what an eminence the Greeks had attained in every other kind of science, and particularly those so absolutely necessary in architectural pursuits. But that such a people as the Goths, emerging like a wild ungovernable torrent from the darkest regions of the north, surrounded only by their own darkness and ignorance, intent upon nothing but slaughter and the subversion of civilized empire, and for some time trampling upon science in whatever form she appeared,\* should be the inventors of a style in architecture at once so beautiful as that to which their name has been given,

\* From the circumstance of *Odin's* emigration from Georgia on the confines of Persia, at the time when the arms of *Mithridates* had spread terror through that part of the globe, and in which he traversed a vast tract of land, till he settled in Scandinavia; it may perhaps be argued, that he carried with him a knowledge of those sciences, at that time known and encouraged in the east, and of course, that the descendants of his army, who formed the principal part of those swarms of northern invaders, that during the middle ages deluged the world with blood, and enveloped science and literature in a cloud of darkness and obscurity, would also have inherited some portion of knowledge that might have led them to attainments that would have enabled them to have been the inventors of this style of architecture. But, if we analyse the particulars of *Odin's* government and religion, we shall find that their principles abolished pursuits of every kind that had not a warlike tendency, and which did not,

given, and requiring a mechanical and mathematical nicety of construction, then scarcely attained by the most refined nations of the east, must appear to every mind capable of reflection utterly impossible. But, independently of this probable ignorance in the art of building any thing beyond the rude fortification that defended their camp, temporarily erected, where chance or their wandering disposition had placed them,

in the end, lead to the attainment of martial superiority, in preference to any fame that might accrue from the pursuit of science :

—— “ A strange and savage faith  
“ Of mightiest power.”——

It is to this circumstance that the ignorance, and, indeed, the antipathy to science which the Goths, &c. ever evinced during the first ages of their appearance as conquerors, is to be attributed ; and in all probability, this barbarism must have pervaded their architectural productions also, and which, with their sculpture, &c. cannot better be described than in Pope's Temple of Fame.

“ Of Gothic structure was the northern side,  
“ O'erwrought with ornaments of barbarous pride.  
“ There huge collosses rose, with trophies crown'd ;  
“ And Runic characters were grav'd around.  
“ There sat Zamolxis with erected eyes ;  
“ And Odin there in mimic trances dies.  
“ There on rude iron columns smear'd with blood,  
“ The horrid forms of Scythian heroes stood,  
“ Druids and Bards (their once loud harps unstrung),  
“ And youths that died to be by poets sung.”



them, even the earliest specimens that can be discovered of the pointed style, were not in existence, till succeeding empires had almost swept the Goths from the face of the earth, or they had become so incorporated with other nations, that they had ceased to be considered as one themselves. But, even allowing the primitive Saxons to have received their first rudiments of building from the Goths who settled in Germany, I do not see any reason why their title is more applicable to the succeeding ages of their improvement in the art, than the epithet Egyptian would be proper for the architecture of Greece in aftertimes, because the Greeks received their first seeds of science from that country.

It appears then most natural to suppose, from its having no direct principles of proportion—no decided character of ornament—but subject to every variation that the luxuriance of fancy might suggest; and being opposed to that of the Greeks, where, from the single dimension of the diameter of a column may be deduced the proportions of the whole superstructure, that this species of architecture derived its appellation from its irregularity in design, bearing some affinity to the wildness of the Goths

as

as a nation : at least this appears to me its most probable derivation ; for any attempt to speak with certainty of a thing so remote, and which must depend more upon the conception of a writer, than upon any facts to which he can revert, must be considered only as an unpardonable presumption. Having thus far spoken of what I have thought the most natural origin of its appellation, and attempted to prove, that though it bears the title of Gothic, we are not to look to that people as its founders, I shall proceed to a more accurate review of my subject, as forming a distinguished style in the science of architecture.

The distinctions between this and the Grecian style are so obvious, and so well known, that any minute investigation of its various parts, merely for the purpose of a comparative analysis of its decorations were needless ; suffice it therefore to say, that the grand characteristic of the Gothic is the pointed arch, and the particular difference in the principles of erection, consists in its arch springing directly from the capital of the column, instead of from an horizontal architrave and entablature, and this difference, although it may not appear to have so great a degree of solidity, yet, perhaps, displays much more

more excellence in the art of construction, both as to the lightness and nicety of the works of the arch, and the strength of the pillar supporting it.

Each country appears to have a style of Gothic peculiar to itself; thus, the more northern nations have been distinguished by a redundancy of ornament; in France it was light and simple; while Spain presents nothing to the eye but the gigantic and the massive; and in Italy again, contrary to all ideas of beauty and propriety, we find circular arcades and porticos, forming a mixture of the two styles, as in the cathedrals of Pisa and Orvieto. But as it has flourished, perhaps with greater success in our own country than in any other, I shall speak of its progress merely as being connected with it, keeping my observations completely within the bounds of what I think may be deemed English architecture; and in this pursuit, it will be absolutely necessary to enter into some detail with respect to the Saxon and Norman styles, which, as being the predecessors, are certainly in a great measure to be considered as the introductions to the Gothic, and which have, by the accounts of so many professors, so often been erroneously blended with it.

It



It has been contended by several authors, that the Saxons were totally ignorant with respect to the construction of an arch, and that all their buildings were composed of timber; these opinions have, however, been successfully refuted by the appearance of vaults under the east end of Winchester cathedral, which were erected prior to the conquest, and by another instance, though not so well known, yet still as incontrovertible, of an arch, that at present supports the wall of a private house in Bristol, most likely standing on the scite of some ancient building, over which is an inscription in characters that prove it to have been of Saxon origin.

It is to be presumed, at least as a probable fact, that the first regular constructions, according to any rules of architecture in this country, were formed by the Romans, and that after the Saxons had been invited to repel the incursions of the Picts and Scots, and became masters of Britain, they still continued the Italian principles of building, though doubtless with the introduction of many of the characteristics of their own country; but they do not appear to have executed any buildings of sufficient magnitude, either to claim the attention of the Historian  
of

of Architecture, or to give any determinate idea of their style, till the arrival of St. Augustine, and the conversion of Ethelbert of Kent and his subjects to Christianity, enforced the necessity of buildings for the performance of its numerous rites and ceremonies; when monasteries were erected in various parts of the kingdom;\* and the arts under such favourable auspices, would most likely have flourished with considerable success, had not these days of temporary peace and tranquillity been interrupted by the incessant inroads of the Danes, who in their several incursions destroyed all those buildings, which lay within the reach of their desolating hand, and the Saxons appear to have been utterly discouraged from the attempt of rebuilding them, till Alfred's success against these invaders of his rights, once more reinstated his country in tranquillity, and with his return to the throne, the embers of science began to revive; and as the erection of churches and convents at once gratified his pious disposition and his passion for the arts, architecture seemed particularly to enjoy his more immediate patronage. During his reign therefore, and the succeeding ones of  
Edred

\* The ruins of one at Canterbury still retains the name of St. Augustine.

Edred and Edwy, the dilapidations of the Danes were partly restored, and the influence of the monks upon Edgar, who ascended the throne immediately after, completed the work of restoration, which the piety of Alfred had begun, and was the cause of the foundation of many new monasteries. Some architectural improvements also, appear first to have been introduced in his reign, particularly in the Abbey of Ramsay in Worcestershire, finished in 974; which from the accounts that have been preserved, seems to have been built in the form of a cross,\* with two towers rising above the roof. This is most likely the earliest instance of any building upon this plan, as most of the Saxon churches were formed more according to the plans of the Basilicæ of Rome, having the east end circular, and differing in the form of construction from the temples, by having the pillars placed internally, instead of externally, forming a sort of portico

\* Many of the sacred buildings of the east, in the earliest ages of their antiquity, were erected in the form of a cross, although from different motives to those which influenced our architects in adopting that plan, they wishing that their buildings might appear to point to the four quarters of the earth. Among those that were conspicuous, still stands the ruins of one in the Soubah of Benares.



portico open only towards the main body of the church.

The appearance of these towers producing such a grand and striking effect, they were adopted in most of the religious buildings erected subsequent to this period. Their first introduction has been naturally enough attributed to the invention of bells, which made the addition of a high raised edifice for containing them necessary; but as some of the oldest buildings in Denmark have a sort of wooden tower supported by posts, rising considerably above the other parts of the church, I should rather suppose them to have been introduced by the Danes, who, after their invasion, left us many relicts of the architecture of their own country, which were adopted according to the convenience or taste of the Saxons.\* Thus, when I am speaking of the Saxon style, I shall always include the Danish innovations of the times, as forming a portion of it, whether they are to be considered as improvements or defects.

The Saxons appear to have followed the

D

Romans

\* And the towers in England being at first detached from the body of the building, as they were in Denmark, in some measure corroborates this opinion.

Romans, in the almost constant use of the semi-circular arch, of basso relievos in the circular heads of recesses and doorways, and in many other peculiarities. The solidity of their walls, entirely precluding the necessity of buttresses, they often had recourse to ranges of semicircular arches; springing mostly from small columns, but in many instances from a corbell; and sometimes profusely decorated with ornamented archi-vaults, in order to relieve the extreme heaviness of the large plain surface of wall; and these ranges of arches were, in many instances, continued one above another nearly to the top of the building, while the whole was frequently crowned with a plain battlement. The other characteristics of their style, consisted in the short thick massive column; sometimes scarcely higher than the length of its circumference, with capitals and bases, often perfectly plain, but in many places rudely carved, in imitation of the forms of animals and the outlines of leaves; and in frequent instances ornamented with a groove or bead, encircling its circumference in a spiral direction from top to bottom; as in the south entrance to Wimboldsham Church in Norfolk, though here the columns are slender, and have a fluted capital spreading like a fan, and spring-  
ing

ing from a torus molding. They were also accustomed to ornament their piers in the same manner, as may be seen in the Ruins of a Chapel at Orford in Suffolk. I do not mention these instances for their singularity, but as being well known, and having been thought the best examples to be produced, by others, who have written on the subject.

In their first specimens, the Saxons appear to have been particularly plain in all their architectural productions, and either from their real ignorance of decoration, or the natural simplicity of their taste, used little or no ornament; but, as their buildings increased in number, workmen improved in their execution; and in some of their later instances, we find a profuseness of decoration that appears little analogous to the principles of their style; particularly in the mouldings of their arches; in many of which may be seen a number of different ornaments blended together, giving the whole a richness of appearance, but certainly not agreeing with those ideas, which are attached to the beauties of simplicity, and which we are led to expect from the plainness of many other parts of their buildings.

On an accurate inspection and comparison of these ornaments, we shall likewise still per-



ceive the influence of the architecture of Rome, particularly in the embattled and triangular frettes, which scarcely differ in form from those so frequently used among the ancients: the others that appear principally worthy of notice, are The BILLITED MOLDING, composed of pieces of stone of a cylindrical form, placed at small distances from each other.

The NAIL HEAD, and what is called The HATCHED MOLDING, so named from its having the appearance of a thin substance of stone notched by the stroke of an axe; this was frequently used as a string course, and in Norwich Cathedral there are some columns entirely composed of it; but the ornament which appears by its more general use to have been the favourite, is

The CHEVERON, or ZIG-ZAG WORK, of which may be seen many specimens in different parts of the kingdom; particularly in an arched entrance to Peterborough Cathedral, where it is placed in every position that fancy could devise.

They also frequently used grotesque heads, and animals, in different parts of their buildings, particularly in corbells, to support the ranges of small arches before-mentioned, instead of columns. Their internal decorations, were  
nearly

nearly the same, but more thickly clustered ; indeed in several instances, as in a range of intersecting arches at Castle Rising in Norfolk, they were unbounded in the use of their ornaments ; though sometimes, as in this example, they were so richly disposed, that it is impossible to refuse them the tribute of our admiration.

These appear to be the principal characteristics of the Saxon style ; but as some may wish for a more accurate knowledge of their architecture, that they may gratify their inclination by an actual inspection of its beauties and defects ; I beg leave to refer them to what is considered as the most correct specimen now in existence in this country, in the north transept of Winchester Cathedral, which, though not *finished* till nearly fourteen years after the conquest, appears to have been constructed entirely upon a Saxon plan.

On the accession of William the Conqueror, architecture was so far from declining in the estimation of the king and the people, that many new abbeys and castles were erected ; but the Normans appear to have differed from the Saxons, only in the magnitude of their buildings, and the increased proportion of their va-

rious parts; being always distinguished by the same characteristics, and using in most instances the same ornaments, though perhaps with superior execution, from the circumstance of masons being brought to England from the continent, and the ease with which the Caen stone was worked on account of its softness; a stone, to which they were attached from a national partiality, and which they accordingly imported from Normandy, to use in most of their buildings in this country.

We have a stone nearly resembling this, both in appearance and quality, in Surry, of which many of our early buildings were constructed; but from its softness it is so easily injured by the weather, and the moldings formed from it are so little able to resist the efforts of time, that it was never calculated to give to posterity those works of our ancestors, which, by their present existence, might have determined our ideas with respect to their different styles; perhaps have elucidated every difficulty; and by giving us the certainty of ocular demonstration; have precluded the necessity of so many assertions founded only on imaginary facts; and of so many opinions guided merely by fancy, or by some accidental discovery of those



those partial remains, many of which perhaps only shew the alteration of succeeding ages, while their original character may have been entirely obliterated.

From what can be collected then, amid the obscurity that seems to envelope the early ages of architecture in this kingdom; it appears, that the style first pursued by the Norman conquerors, when they swayed the sceptre of the arts as well as of the government, differed in its characteristics very little from the Saxons; and that in the beginning of the twelfth century, just before the last king of the Norman line ascended the throne, not the least deviation from the circular to the pointed arch had taken place, although various improvements, both in construction and composition, had been suggested and adopted; nor do I conceive that these styles have the least right to the appellation of what are now called Gothic; for although they may not differ from it in that one principle of construction, of the arch springing directly from the column, in almost every other instance, it forms totally a different species; but the change not taking place suddenly, and the revolution in taste being gradually effected, as new ideas were presented to the minds of those among our

ancestors engaged in architectural pursuits, it has naturally been spoken of, merely as forming another species of the Norman style, when it ought to have been considered as the natural production of those, who by birth and residence had become Englishmen, and who, though they might have changed the style of their architecture gradually, did not do it the less completely or effectually. Thus, although the prevailing customs of the times in which it was invented, chose to apply the epithet of Gothic, to every style that was not formed upon the classical principles of Rome and Greece, I think that the title of English architecture, is more properly applicable to that style which at present engages our attention. But as epithets are in themselves of no consequence, and do not form the principal object of my present investigation, I shall still use the term which custom has rendered the most familiar and intelligible, and by which the generality of the world recognize this species of architecture.

As many different opinions have been started about the origin of the pointed arch, as those I have already enumerated respecting the application of the term Gothic; and most of them with as little degree of certainty; many of their  
their

their supporters being far more indebted to their own imaginations for their conceptions, than to any scientific fact as a ground for their formation. It appears also, nearly impossible to glean, even from the writings of the most able authors, any certain truth upon the subject, as the best writers entertain such a contrariety of opinions, and such a variety of ideas, that what is positively asserted by some whose abilities no one can question, is sometimes directly contradicted by another, who may possess as good a title to our belief, and as good a character for taste and judgment as his opponent.

Warburton; who has mentioned the subject, and whose works have been so deservedly admired; has displayed a great deal of poetical ingenuity in his elegant comparison of the nave of a Gothic church to an avenue of trees, where the overhanging branches meeting at the top, form a sort of pointed arch, while the stems represent the clustered column, which is so peculiar a characteristic of this style. He deduces his observation from the following argument; that, as the Goths in the early ages of their barbarism offered incense to their deities in groves, they would most naturally imitate the appearance of them as closely as possible, when the difference  
of



of climate, or a state of increased civilization, should induce them to have recourse to art for those temples, with which, till then, nature had most amply supplied them.\* Upon this idea, although replete with beauty, no dependance is certainly to be placed, as it is evidently the mere creature of the imagination; and in the history of an art in which it is absolutely necessary that mathematical precision should be preserved, we must be careful not to suffer our judgments to be misled by the beauties of imagery, or the poetical elegance of a simile; and why should we be at the trouble of forming abstract ideas on a subject; in which simplicity and probability, with the few facts that present themselves, should be our only guides? Again, it has been asserted by many; that it was first brought into England from the Holy Land; but succeeding surveys of the architecture of that country, are so far from corroborating such an assertion, that very few buildings bearing the least affinity to this style can be discovered, and of those few, no precise date can be ascertained,

to

\* An idea of this tendency, at once supposes a nation scarcely characterized by any thing but its barbarism, to have arrived at a great state of perfection in a science, in which even now so much improvement is required.

to prove whether they were erected prior, or subsequent to our own. Independently of this argument against its coming from the east, I find upon a comparative chronological reference to the history of our country; that the first crusade, by which it is asserted to have been brought over, did not take place till after the year 1189, and specimens of the pointed style can be produced in Britain erected as early as 1130.\* The Saracenic, is also much more domical than our Gothic, and bears very little resemblance to it in its original state, either in its general character or the minutiae of its composition, otherwise than as they both, in a certain degree, tend to the pyramidal form; though our later specimens, are certainly interspersed with some ornaments, that may perhaps be said to derive their origin from eastern architecture.

For my own part, I should rather suppose the idea of the pointed arch to have been presented, by the accidental intersection of two semicircles, which I believe will be found to give that angle which was used in our earliest instances; and a range of semicircular arches intersecting each other, at the Church of St. Cross,

\* At St. Cross, near Winchester.

Cross, where the parts between the intersections are alone perforated, seems to corroborate this opinion. These, as well as the whole of the east end of that church were constructed in 1130, and appear to be the earliest example in this country, and to have given the first idea of the style which has since been called Gothic; and which from this time began to be generally adopted in all the new buildings throughout the kingdom; at first forming little variation from the Saxon and Norman, except in the point of the arch; but by degrees attaining a much greater delicacy and more frequent use of ornament, both in the capitals of the columns and every other part of the building; till, towards the end of the reign of Henry 3d, about 1272, it appears to have become completely a different style.

The short massive column was changed for a cluster of small pillars (sometimes bound together by an ornamented band),

“ To slender shafts of shapely stone,

“ By foliag'd tracery combin'd ;”

part of the projections of the shafts continuing through the capital, formed the molded rib of the light groined arches of the nave.

The



The horse-shoe and semicircular arched windows, gave place to pointed ones; containing numberless mullions and intersections, and generally glazed with a stained glass; which, by softening the harshness of the light by its various colours, gave an indescribable effect to the whole of the interior, and made it particularly adapted to the performance of religious ceremonies; and these improvements continued, till beneath this newly acquired lightness and elegance, no traces remained of the cumbrous and heavy characteristics of Saxon architecture.

To describe particularly every thing that forms the character of this style; to give a minute detail of its various parts; a description of its numberless ornaments, and a progressive history of their adoption; would be extending far beyond the limits of an Essay of this kind; and much more accurate, as well as a greater degree of information may be gained, by an attentive inspection of one of our cathedrals, than by the perusal of volumes. Suffice it therefore to say, that no rules being absolutely laid down, the architect was left to indulge all the luxuriance of his fancy, and to execute any whim that might enter his imagination.

The style of this architecture being so  
peculiarly

peculiarly adapted to the solemnities of religion ; it was at first principally used in cathedrals, but was soon adopted in other public edifices, and till the end of the 15th century, reigned with a more extensive dominion than the most admired of the Grecian orders.\* Cities, seemed to contend which should possess the richest churches, and this emulation gave rise to the exertion of all the architectural talents of the country ; till fancy was completely exhausted in the variety of ornaments, that, during the 13th century in particular, were used in our Gothic structures.

Almost every cathedral was built on the plan of a cross, some having two towers at the west end, as at Westminster ; and others with a tower rising from the centre at the intersection of the nave and transepts, as at Canterbury ; and frequently with the addition of a spire, as at Salisbury ; but these towers were not joined  
to

\* Dallaway, in his *English Architecture* observes, that Gothic architecture may be as clearly and distinctly characterised, and divided into different orders, as the Grecian. How far this observation is just, as it respects a style in which is mingled so much ornament, and in which luxuriance of fancy seems to be the only guide that was ever followed, I intend to make the subject of some future Essay.

to the main body of the church till the reign of Edward 3d.

The Roman Catholics requiring great space for their processions and other religious ceremonies, will in some measure account for the extreme length of the nave; which in some cathedrals appears quite out of proportion.

Another characteristic of the Gothic church is the great western window, which it is supposed was first used in the church of St. Cross; where it is divided by simple mullions into five principal lights, the wheel above being ornamented with trefoils; but during the reign of Edward the 1st, when the use of them was more general; the intersections became far more complicated, and transoms and ramified mullions were introduced, rendering them one of the principal objects among the beauties of the building; and in many instances the complicated workmanship was so finely executed, that

“ Thou would’st have thought some fairy’s hand

“ ’Twixt poplars straight the ozier wand,

“ In many a freakish knot had twin’d;

“ Then framed a spell, when the work was done,

“ And chang’d the willow wreaths to stone.”

The cause of the first introduction of spires, which certainly forms a most beautiful part of  
many



many of our Gothic structures ; as it can be deduced from no apparent utility that they possess, has been often disputed ; but as the Egyptians held the form of a pyramid sacred, and used it only in their religious and sepulchral constructions ; and as spires are also pyramidal, it is but natural to suppose that they were used as a kind of symbol of the destination of the building, and adopted from the same ideas that led to their erection in Egypt :\* they were frequently carried to immense heights, and a sort of emulation subsisted among the architects, who should succeed in erecting the highest ; and great ability, science, and ingenuity were displayed in their construction.

Their towers were frequently entirely composed of ranges of Gothic arches, niches and recesses, placed one above the other, and the whole crowned with a sort of battlement, which at once formed an elegant finish, and gave the appearance of strength and character to the building. On

\* I mention Egypt as having been particularly famous for its pyramids ; although, in tracing the history of architecture in the east, we shall find that the buildings in every country tended to the pyramidal form, which was first used as having a resemblance to a flame of fire, an element, so generally worshipped in the oriental world ; in Persia under the Mithraic devotions, and in Hindostan under the name of Surya.

On the external sides of the cathedral, from the thinness of the walls requiring some additional strength, buttresses were erected; first, merely as an indispensable requisite to the support of the building, as they resisted the pressure of the internal arches against the walls; but the ever active genius of man soon made them conducive to the ornament, as well as, the utility of the structure; so that in many instances we find them forming no inconsiderable beauty, and giving no little effect to the general character of the construction. Those in particular, are worthy of admiration, both from the additional lightness which they give to the appearance of the structure, and the superior skill required in their execution; which, from the perpendicular part being placed at some distance from the wall, have been denominated flying buttresses. In these, the building receives its support from molded ribs of stone, extending in a curved line, from the foundation and other parts of the buttresses, to the sides of the cathedral; while the detached perpendicular construction, is ornamented with niches and figures, and frequently finished with a pinnacle or statue. There is also another kind, where the buttress is attached to the lower part of the building,

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but

but rising considerably above the roof of the side aisles, molded ribs are carried from the upper part of it, to the receding external wall of the upper elevation of the centre aisle, and by this means it contributes to the support of the highest arches in the building.

The interior of the nave, in general consisted of three parallel aisles; the centre one generally rising considerably higher; and extending much wider than the others. The groined arches, springing from columns of an immense height, and a part of the divisions of the column, serving for the molded ribs of the arched ceiling, gave the roof a kind of natural and elegant connection with its support, that added much grandeur to the general appearance of the whole.

The centres of the groins at the intersection of the ribs, were frequently, even in our earliest specimens, ornamented with a cluster of flowers; or sometimes, with a single flower, or head; but, as the art improved, these ribs were made to branch out in various directions; intersecting each other, and richly studded with a number of variegated ornaments; forming a sort of tracery or embroidery, covering the soffit of the arched ceiling, and the principal ribs  
being



being frequently gilded, the whole possessed an appearance of much richness and magnificence. The ornaments that we find, were in the first instances, used in these groined arches, generally consisting, of a grotesque head, or one large flower, is I think the most conclusive argument against that idea, which derives the Gothic church completely from the origin of a grove. For, had that been the case, it is but natural to suppose, that these ribs, which doubtless were intended to form the branches of the trees, would also have resembled their imagined original in its ornaments, as well as in its outline ; but we seldom, if ever find, that they were in the early examples, at all ornamented with foliage, which would certainly have been the most natural decoration, for any ceiling, intended to imitate the overhanging branches of an avenue of trees. These intersections of the ribs in the groined arches, gave rise to the formation of flatter ceilings, composed of a minute sort of tracery work, rendered still more beautiful, by a judicious combination, of almost every ornament which had been adopted in preceding examples of Gothic architecture. These ceilings were in some instances formed of stone ; as in Henry the VIIth's chapel at Westminster ;

and St. George's chapel at Windsor ; and in others of wood ; as in a small chapel at Canterbury ; but it is something remarkable, that those, which were formed of timber, and which were of course found much easier in the execution ; were never so complicated in their design, or so richly decorated, as those of stone ; a circumstance, which proves that the sculpture of the latter material, must have arrived at a great pitch of excellence ; and that there were many good artists capable of undertaking the execution of the most difficult compositions. The flowers, dropping below the surface, in the centre of the ceiling, and resembling the pendent pieces of rock and crystal, which we so often observe in natural grottos, had a graceful and pleasing effect ; while the curved molded ribs, clustered with ornament, and descending, in a pyramidal form ; to a point, or finishing with a piece of carved work, in the angles of the apartment ; and between the arches of the windows, and forming, with its principal molding, an arch over the whole side of the room ; gave a majestic appearance, that is seldom equalled in any other style of architecture. Indeed, the more our eye traces the numerous intersections, and various ornaments that characterise

characterise these pendent ceilings; so much the more, is the mind led to admire the fancy and taste of the architect, and the wonderful ingenuity of the mechanic employed in their construction. Among the many minuter ornaments, that characterise these pendent decorations of the roofs; and which also form prominent features, in almost every other part of the Gothic structure; particularly, as filling the interstices, of the upper ramifications of windows; and forming the heads of recesses and doorways; we must distinguish the quatrefoil, and trefoil; not only, for their frequent use and elegance; but also, as being one of those few, which I think may be derived from a Saracenic origin. The grounds upon which I have formed this opinion, are;—that it does not appear to have been used, till some few years after the first crusade; and that, if correctly analysed, it will be found, to be, merely the connection of three, or of four crescents, joined at the extreme point of the horn; nor will any person think this conjecture totally without foundation; when he considers the almost constant use of the crescent among the Saracens, both as a sacred symbol, and as an ornament in all their works of art, wheresoever it can be introduced, with the



least degree of propriety. The other principal ornament, that we can, with any degree of probability, trace to the same origin ; are those leaves, whose outlines, so frequently grace the capitals of columns, in many of our ancient cathedrals, and which upon a correct, and comparative inspection, appear to possess a great resemblance to the leaves of plants, that grow in Palestine and Arabia ; and, which were as naturally adopted in those countries, for an architectural ornament ; as the foliage of the acanthus, was borrowed by Callimachus to form the beautiful capital that decorates the Corinthian column.

We also find a resemblance, to the architecture of these countries, in that particular species of the pointed arch, which is formed by the junction of four segments of a circle, with two of them reversed : an arch, frequently to be discovered, in drawings of the Moresque, Arabesque, and Saracenic styles of building ; and which was frequently used in our Gothic structures : particularly in the ornamental parts of the interior ; as in screens, and altar-pieces, where no weight was to be sustained ; and where a peculiar delicacy of ornament was required.

These

These decorations, with that general pyramidal tendency, which, not only the outline of the structure possesses; but which also pervades, in the pointed windows, and doors;—the heads of canopies—the pinnacles—buttresses—and even some of the minutest ornaments, are the only correct resemblances, between the oriental and the Gothic styles of architecture, and the principal reasons, which have ever been advanced, for the idea, that derives our ancient cathedral, totally from the structures of the east. Nor, do I think that the most correct analytical comparison, will discover any other resemblances between them, to prove that the pointed arch was adopted in England, in imitation of any, that had been seen, during the travels of our ancestors in oriental countries.

About the year 1200; when this style of architecture had made rapid steps, towards attaining some degree of superiority over every other, that had been adopted in our country; the sculptors and architects determined, no longer to take the ornaments of their buildings, completely from the forms of animals, or the foliage of plants; but, rather to attempt an imitation of the human figure in their statuary. The empty niches, both of the exterior and

interior, accordingly became tenanted by statues, rather rudely executed, but possessing great character in their various attitudes, and giving considerable effect to the rest of the building. These figures, for the most part, were intended to resemble some distinguished character in Scripture; the forms of particular abbots, monks, or nuns; or were placed, in commemoration of the kings, or other great men, who had been the founders of, or contributors to the structure, of which they formed a part of the decoration. Free stone was the principal material, from which they were most frequently sculptured; but we have many examples in wood, and also of some that were cast in brass and other metals.

We must also consider these statues, as another great characteristic, in which the Gothic, differs both from the Saxon and Norman architecture; as in those styles, there are no instances of sculptured figures; unless we reckon those mezzo relievos, which we sometimes find over the doorways, in some of the original Saxon buildings; and which, as has before been observed, were, most probably, imitated from the Romans.

The western ends of the cathedrals, were frequently adorned with rows of these statues,  
placed



placed in tabernacles and niches, and raised upon small octagon pedestals: in the earlier instances, indeed, they were very rudely sculptured, as may be seen by those cathedrals of Salisbury and Peterborough; but in later times, great improvements were made in this valuable art, and which is very evident in the statues, subsequently placed at Wells and Lichfield. The sides of these pedestals were generally adorned with an escutcheon bearing the arms of the person, whom the statue was intended to represent, but in some instances we discover them to have been richly ornamented with Gothic moldings, intersecting each other in trefoils, and other tracery work. But the best specimens of this art, among the Gothic architecture, seem to have been placed upon their tombs, in many of which, a great deal of labor and time must have been expended. These figures were generally placed in the attitude of prayer, kneeling upon a cushion, with their hands clasped and eyes uplifted to heaven; but these were far inferior to many that were placed in other attitudes upon the tombs of distinguished characters.

The principal figures which they in the first instances imitated, being completely enveloped

loped in a profusion of drapery, like that of the bishops and monks, prevented very great progress being made in the delineation of the human limbs; and also, in some measure, precluded the absolute necessity, of any knowledge in anatomy, without which, no perfection can ever be attained in sculpture. In aftertimes; however, when we find in their statues, that the outline of the human figure was more distinctly marked; some knowledge of the anatomical science must have been attained; which is particularly evinced in the tomb of archbishop Chichely, in Canterbury cathedral, the first archbishop of that see; where, there are several skeletons sculptured in high relief, and two figures, representing the archbishop, in the bulky stature, which he had contracted through his gluttony; and also, in that state, to which he was reduced before he died.\* The artists, in the reign of Henry VIIIth, paid particular attention to the improvement of this art, and, not only were the statues improved; but also, every ornamental part of the building, was rendered

\* This archbishop was in the former part of his life a glutton; but in time repenting of his manner of living, he determined to punish himself for his fault, and accordingly starved himself to death.

dered lighter, and received a higher finish from the hand of the sculptor. When I consider these various instances of their statuary, I can never suppose that author totally divested of prejudice, who has chosen to denominate these mitred abbots and other venerable statues of the Gothic style "*monkeys*," and to distinguish the elegant and variegated tracery of their ceilings, by the terms of "*gaudy sculpture*," and, "*trite and busy carvings*, which *glut* the eye, rather than gratify and please it with any reasonable satisfaction." Surely, a person criticising with such severity, could never have troubled himself to assimilate the sculpture that he condemns with the structure which it was intended to ornament; or had forgotten, that there should be an accordance through the whole of the building, and that the decorations, should never differ from the general style, by which the main body of the construction was characterised. Indeed, when we consider that most of their statues were sculptured from so rude and fragile a material as free stone, we are sometimes surprised at the great effect which they have given to many of their works in this art; particularly in their sepulchral effigies, which will be fully proved by a reference to Gough's Accurate



curate Delineation of Sepulchral Monuments. Much of this effect has however been completely spoiled in many of their best performances, by the absurd practice of coloring the faces and drapery of their statues, a custom, however, which I find upon a reference to a History of Ancient Sculpture, was not unusual among the artists of Greece and Rome, particularly as to the drapery.\*

The figures were for the most part placed in pointed niches, sometimes hollowed out in a semiocagonal form, with moldings running up the angles, which formed a tracery work in the soffite of the arch. In other places we find them seated under pyramidal canopies, or standing

\* The following extract from a short dissertation on the sculpture of the ancients, not only mentions the custom of coloring the drapery, but assigns the particular color for each statue. "The color of vestments, peculiar to certain statues, is too curious, to be omitted. To begin with the figures of the Gods. —The drapery of Jupiter was red; that of Neptune is supposed by Winkelman to have been sea green. The same color also belonged to the nereids and nymphs. The mantle of Apollo was blue, or violet. Bacchus was dressed in white. Martianus Capella assigns green to Cybele. Juno's vestments were sky blue, but she sometimes had a white veil. Pallas was robed in a flame colored mantle. In a painting at Herculaneum, Venus is in flowing drapery of a golden yellow. Kings were arrayed in purple; priests in white; and conquerors sometimes in sea green." (*Encyclop. Britt.*)

standing on pedestals on the tops of buttresses, or on other external parts of the building. There are many examples, to which the reader might be referred, where he will see them in these different situations; but I believe that Oxford affords some of the most interesting specimens, and Dallaway points out this city, as the best spot in which to trace the rise, and gradual progress of sculpture in England, as possessing statues in almost every æra of architecture.

Having thus attempted a slight review of those figures, which form such a characteristic decoration of many of our cathedrals and churches; I cannot leave the subject without offering a few words in its defence, against that rigid criticism which has so severely, and in my opinion, in many instances, so unjustly condemned it as grotesque, unnatural, and totally unfit for architectural decoration.

Numberless faults have been found, and many errors undoubtedly exist, in Gothic statuary, when compared, with the wonderful sculptures in porphyry and alabaster, with which those skilful and sublime artists, Phidias, Praxiteles, Apelles, and Lysippus, adorned the public buildings of ancient Greece. But, the fastidious critic, whose eye turns with disgust  
from

from every thing that does not possess the classical beauties and proportions of the antique; and who supposes every figure unworthy of the least admiration, which does not, like the statue of the Olympian Deity, seem to

“ Shake his ambrosial curls, and give the nod,  
 “ The stamp of fate and sanction of the God,”

should consider, before he indulges in such an illiberal and general condemnation of those which adorn our cathedrals; that the refined and polished sculpture of the Greeks, which certainly possesses such just claims to his admiration; would have been as much out of character, if placed in the rude niche of a Gothic structure; as the half formed but expressive figures of AARON—MOSES—or the TWELVE APOSTLES, would have appeared ridiculous, had they obtained situations on any of the elegant pedestals of ancient architecture. A critic, in his observation on the ornamental parts of a building, should only consider them relatively with the character of the building itself. For though beauty, in a great measure, depends upon smoothness and just proportion in a single statue; yet in its connection and relative situation in a building, where it becomes a subordinate



nate object, its principal beauty must consist, in its coincidence with the general character of the structure, in which it is placed : and I believe, that no one will ever deny, that there are ideas of beauty attached to the preservation of uniformity in the character of any composition, whether of painting or architecture. But, independently of the Gothic sculpture deserving some portion of our admiration from its possessing, and agreeing with the other characteristics of the style to which it belongs : Mr. Knight, in his Analytical Enquiry into the Principles of Taste, has allowed the *grotesque* to possess a beauty in itself ;\* and exemplifies his observation, by a reference to those whimsical and extravagant paintings, called, from the subterraneous apartments in Rome. His observations, will also apply to the *grotesque* in sculpture ; when he says, that, “ though from such combinations of human, animal, and vegetable forms in nature, our understandings would revolt, and we should turn from them with scorn and disgust : yet in judging of the imitative representations of them, we do not consult our understandings, but merely our senses “ and

\* Knight's Analytical Enquiry, chap. v. sect. 20.

“ and imaginations; and to them they are  
“ pleasing and beautiful.” Again, in answer  
to the criticisms of Mr. Evelyn, who in his  
Comparisons between Ancient and Modern Architecture, observes, that “ when we meet with  
“ the greatest industry and expensive carving,  
“ full of fret and lamentable imagery, sparing  
“ neither of pains nor cost; a judicious spectator is rather distracted, or quite confounded,  
“ than touched with that admiration which results from the true and just symmetry, regular  
“ proportion, union, and disposition;” let me ask Mr. Evelyn, whether, there is not a certain degree of admiration and pleasure, attached, even to the ideas of that industry alone, which he allows must have been exerted in the work; and whether the man of judgment, is not as liable to be struck with the judicious application of the Gothic sculpture; (though *grotesque* in its single appearance) where its connection with the relative parts of the building, and its various points produces that variety of light and shade; which, together with the other grand characteristics of the style, contribute to the formation of that massive structure, and that sombre appearance of our cathedrals, that irresistibly impresses our minds with ideas of sublimity; as he  
is,

is, to acknowledge the undoubted beauties which arise from the true and just symmetry, and regular proportions of the statues of ancient architecture?

In my defence however, of the sculpture appertaining to that style of architecture, in the history of which I am engaged; I am so far from attempting to detract from the beauties of Grecian statuary, in my analytical comparison of the difference of their styles; that I would not have it thought, my intention, to give the Gothic, even any comparative excellence with the ancient sculpture, except in its relative situation, as being connected with the buildings to which it belongs. For if taken separately from the other characteristics of this style of architecture, the Gothic sculpture certainly loses its beauty; while the statues of ancient Greece and Rome, still call forth as much admiration in the Gallery of the Louvre at Paris, as they ever attracted in their original situations, from which they have been ravished by the hands of so many conquerors.

Thus much, for the Gothic statuary; I must now proceed to that part of my historical detail, in which we shall see Gothic architecture arrived at a superior pitch of excellence, to

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that



that which it had yet attained ; and in which state we may consider it the prevailing style of building throughout Europe.

There are a number of incidents, which, though at their first occurrence, they may appear totally unconnected with the arts and sciences ; yet, are often found, to have a very extended influence, both in their progress and decay. It is thus, that we must attribute that elegant improvement in Gothic architecture, which is known by the name of *Tabernacle Work*, to the death of Eleanor wife of Edward the 1st. That monarch, to shew his respectful memory of his beloved queen, caused a magnificent cross to be erected on every spot, where her body and the funeral procession halted ; and the architect and workmen, were directed to exert all their taste and ingenuity in these productions. We accordingly find that this kind of decoration was invented, for the purpose of rendering the structures as variegated and elegant, and also as magnificent as their size would permit. Most of these crosses have since been demolished, to make room for succeeding improvements in the places where they were erected, or are so dilapidated by the injuries of time and weather, that few of those minuter beauties,

to which I have adverted, are sufficiently discoverable, to give any accurate idea of the original formation of the moldings, and sculptured ornaments with which they were so profusely decorated. But those at Northampton, Geddington, and Waltham,\* are the most perfect, which at present remain, to shew the general plan upon which they were constructed, and the principal outline of those ornaments which rendered them so worthy of admiration.

The extreme beauty of this kind of workmanship, naturally attracted the general attention of the architects of those times; and was soon adopted by them, in their internal decorations, for which it was, in all respects, so perfectly calculated. It was particularly adapted by its richness for screens, and altar pieces, and the lesser parts of the Gothic structure, which about this period were considered, as forming the principal beauties of the interiors of our cathedrals. Elaborate canopies; ornamented pinnacles; and octagonal niches and stalls were

F 2                      introduced,

\* Why does the Rev. Mr. Dallaway denominate these, MARKET CROSSES, in the 30th page of his *Observations on English Architecture*?—Are we to suppose by his giving them this title, that Edward the 1st erected them to be the designation of a market?—The term MONUMENTAL CROSS would, I think, have been more appropriate.

introduced, with the crocket ornament stealing up the angle, till the pyramidal point was crowned with a larger flower, or pine apple, while pendent decorations of fruits, flowers, and emblazonry, were seen in all parts of these compositions; giving the whole a certain luxuriance of appearance, that has obtained for it the title of the **FLORID GOTHIC**. Nor was this improvement in workmanship, kept totally to these lesser decorations; but was soon made subservient to the ornament of the groined and flat ceilings, and the soffites of the larger arches of the buildings; and sculptures of small imagerys were introduced in the fretted roofs of the principal aisles, and chancel,

“ Where Elfin sculptors with fantastic clue,

“ O’er the long roof their wild embroidery drew,”

till the eye was almost wearied with following the numberless windings and intersections of the tracery, and the mind became astonished at the immense labor that must have been required in their execution. Sepulchral chapels were dedicated to the different deceased saints and monarchs, and were covered with this kind of emblazoned tracery; and it is from this description of sculpture that the skilful antiquarian can



can deduce the date of the construction ; a deduction very necessary to be made in any progressive delineation, or pursuit of the different æras of Gothic architecture.

There is a beautiful screen\* of this florid style, under the organ in Canterbury cathedral ; where the divisions of the stalls, in which the statues are placed, are formed by clustered shafts ; while the pyramidal canopies hang over the heads of the figures, and are divided by small uprights, crowned with lesser pinnacles. The large hollow of the cornice over the canopies, is filled with shields, attached to each other by wings, in the same manner that we see cherubim painted in the divisions of windows : while above the cornice, is a repetition of

F 3 smaller

\* Mr. Chas. Wild, in his late publication of Canterbury cathedral, has given a very beautiful view of this screen, in his plate of the western transept. This artist, has it in anticipation, to give to the public, Views of all the celebrated Cathedrals of our Country ; delineating their various and peculiar beauties, accompanied by an historical account. This, together with Mr. Britton's Graphic Delineation of the Architectural Antiquities of England ; will no longer permit contemporary and succeeding artists, men of taste for the fine arts in general ; and those antiquarians who have devoted their talents to researches in our own country ; to regret the absence of works, that will fully shew all those architectural beauties which are at present so little known.

smaller canopies, and tabernacle work. The statues stand upon ornamented pedestals; and in the soffite of the great arch are to be seen projecting pedestals one above the other; on which smaller figures formerly stood, placed in such a position, as to make the soffite of each pedestal, form the canopy for the figure beneath. This is the general style of these screens, which were used to divide the choir from the other part of the aisle. In general these interior decorations were carved in wainscot; (particularly the stalled seats in choirs) but they were sometimes executed in a masterly manner in stone; many of which remain to prove, that the idea of their beauty is not merely to be attributed to the taste of the times in which they were erected; but possess a just claim to the admiration of our own. For none, can deny the merit of their execution; and there are few, I believe, (if we except those critics, who are so completely prejudiced in favor of Grecian architecture, as to be unable to admire any thing, that does not partake of that style) who will venture to assert, that those, engaged in their construction, did not also possess a great taste for, and an accurate knowledge of design; a judicious arrangement of the various ornaments

ments incidental to their subject; and a just discrimination, in combining the various beauties of which their style was susceptible.

The ideas conveyed by the adoption of this complicated method of ornamenting their designs, to the architects of succeeding years; led Gothic architecture to that climax, at which the exhausted fancy could devise nothing more to give it variety—at which the imagination of the architect, was obliged to stop and to confess that he had attained the summit of his genius. Nor could all the fertility of his inventive powers compose any thing, that was not similar to that which had already gained the admiration, and drawn forth the praise of the beholders. Thus, then, we must look to the thirteenth century as the grand epocha of Gothic luxuriance, when the combination of ornament, and profusion of decoration, had been extended over the whole of the building: and when no other ornament could be added without, in some measure, spoiling the grand effect of

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The tall pile  
 Whose ancient pillars rear'd their marble heads;  
 To bear aloft its arched and pond'rous roof,  
 By its own weight, made steadfast and immoveable!  
 Looking tranquillity.

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Among the principal erections in this and the succeeding centuries, we have to reckon the nave and western front of York cathedral—the whole of Litchfield cathedral—a transept of Canterbury cathedral—and our Lady's chapel at Ely. Merton, and New College, Oxford—St. Stephen's chapel, Westminster—together with additions and alterations to several other cathedrals and churches. Henry the VIIth's propensity to increase the architectural decorations of his country, again led to the exertion of talent in the construction of new buildings : and he indulged this propensity, in the erection of his own chapel at Westminster ; King's college at Cambridge ; and St. George's chapel at Windsor ; where the greatest profusion of the ornaments incidental to the florid Gothic is introduced ; nor in any succeeding reigns have these buildings been even successfully imitated, much less surpassed in point either of composition or execution.

The chapel, named after this monarch at Westminster, is particularly worthy of admiration, from the wonderful skill exhibited in its sculpture, and the general effect produced by the appearance of the whole structure ; both in the interior and exterior. The turrets and  
angular

angular projections of the external, are completely covered with tabernacle work, which, must have been in the first instance very finely executed, though now much dilapidated; a dilapidation that has been much accelerated by the buildings that were, till lately, attached to one of its sides, but which are now, at the instance of the Dean and Chapter, happily taken down; so that the whole of this superb construction is now laid completely open to the inspection of the artist, and it is well calculated to withstand the test of criticism. The moldings are carved in solid stone, but most, if not all, of the interstices, appear to have been filled with lath and plaster; a circumstance that I do not remember to have seen mentioned in any of the accounts of this building. It is supposed by some to have cost £14,000; by others £20,000, enormous sums in those days; and by a nice comparative calculation of the value of labor and materials, it is determined that a similar building now, would amount to five times as much, as at the period in which this chapel was erected. In the decoration of many of these buildings, frette ornaments were often introduced, many of which are merely different dispositions

dispositions of the Saxon frettes,\* and which by their variety also added to the beauties of the construction.

The, almost constant, use of stained glass, in the windows of the cathedrals, was another great addition to their beauty ; and completed that solemn effect, so necessary to be preserved in religious edifices. The venerable Bede, attributes the first introduction of glass for windows to this country, to the Abbott Benedict ; who employed foreign artificers in the year 674, to glaze the monastery of Weremouth.†

Others,

\* When I mentioned the triangular FRETTE of the Saxons, I had not met with the following etymology of the word ; and the probable origin of the ornament, in Turner's History of the Anglo Saxons : which, as it is pleasant to derive all our decorations, from objects in nature, I am particularly pleased at having seen, before it is too late to insert it in this Essay. FRÆTWAN, is the Saxon word for adorning a building ; and FRÆTEW for the ornament itself. From these words, FRETTE is naturally derived —and FRÆTAN meaning the teeth of fish, so nearly resembles them, that the triangular ornament of the Saxons, most likely had its origin from the Saxon custom of stringing marine teeth.

† Warton says, that the first notice of a painted window in a church occurs in a chronicle ; which denotes that in the year 802, Pope Leo built a church at Rome, ' et fenestris ex vitro diversis coloribus conclusit atque decoravit ;' and in 856 he produces ' Fenestris vero vitreis coloribus.'



Others, again, say that we are indebted for its adoption in England, to Wilfrid, Bishop of Worcester, about the same time. At any rate, till this period, the art of making such glass was entirely unknown in Britain; although the art of making glass vessels had been known for many years; and in several parts of the country, annulets of glass have been found; having a narrow perforation and thick rim; which were probably used as annulets by the Druids. The adoption of this stained glass, also appears necessary, in some measure to exclude the light, which would otherwise, from so many and such large openings, have proved too glaring, if they had been glazed with white glass. The first specimens were composed, merely by inserting small pieces of different colors, in the interstices of the windows; forming a sort of mosaic work: but the art soon improved, till it arrived at that pitch of excellence, which enabled the artists to delineate many historical subjects, with a great degree of precision. The figures of kings and prelates, were represented in their painted windows, as well as in their sculptures; and the dress of these figures, also forms a grand criterion, by which to discover the date of the building, to those, who possess a know-

a knowledge of the costumes of different periods.

There were several methods of staining this glass ; but, I believe that which was in most general use, merely stained the surface with the color ; and by this means the delineation of various subjects was more easily accomplished ; as they could with a little sand rub off one color, and insert another, without much difficulty ; while in that glass, where the color had penetrated completely through the body, they were obliged to make the different tints by different pieces of inserted glass.

The most ancient specimen, now existing in this country ; is supposed to be a piece of mosaic work, at Canterbury. At York there are several delineations of subjects from the Old, and New Testaments ; executed during the reigns of the two first Edwards : but, the finest specimens, in England ; and perhaps in Europe ; are the range of large windows in the chapel of King's College, Cambridge, finished in the beginning of the fifteenth century ; which from the size and number of the windows, as well as from the magnitude of the delineations, have a grand and striking appearance ; and are an admirable example of the effect to be produced,  
by

by a judicious application of this ornament. As the windows increased in dimensions, the figures were portrayed as large, or larger than the life.

The eastern window of St. George's chapel at Windsor, is the finest specimen among our modern attempts. For the delineation of the cartoon we are indebted to West; and for the able execution of this celebrated painter's work, to the abilities of Thomas Jervais; who died in 1801, and who was much admired for the exquisite manner in which he finished small subjects; but the enormous expense to which these works amount, prevent their being generally adopted, even in the repair of those cathedrals where the loss of them is so much to be regretted.

This stained glass, in the earlier times of its introduction into England; seems to have been held as peculiarly valuable; for, like the Tyrean dye of the ancients we find it bearing the name of royalty,

“ In her oryall—wher she was

“ Closyd well with ROIALL glass.

“ Fulfilled it was with ymagery.”

But let us direct our attention for a few  
moments,



moments, to their mechanical principles of construction ; and see how far that opinion is justified, which denies the architects of these Gothic edifices, any knowledge of the powers of mechanism, and a proper application of practical mathematics. An opinion, which I believe has been formed, first, from the circumstance of most of their buildings being composed of small stones, which were easily conveyed to their destined position by manual labor ; and secondly, from the slight appearance of the support which they have given, in the diameter of their columns, and thinness of their walls, to edifices of such uncommon magnitude. The latter circumstance however weighs, rather against, than for the argument, which denies them this knowledge : as it required nicer principles of construction to form the vaults, and other parts of their immense roofs, which were to be supported by such slight buttments.

The machine of a Gothic cathedral, consists of vaults and arches, which rendered the greatest exertion of skill necessary, to balance and sustain the different pressures. The choice of small materials was also judicious ; for as the splendor of the work consisted, principally in arches and groins ; the lighter the material proved ;

proved ; the more appropriate was it to be used in their fabrication. Small stones, were therefore, certainly preferable to those larger ones, which press too heavy on the centres, and require much time and labor in forming to the curvature of the vault.

But, before we proceed any further, in the analysis of those principles of construction, which were adopted by the Gothic architects; let us first turn our attention to their general use of the pointed arch, for which they have been so often blamed; and by Sir Henry Wotton in particular, who condemns this arch (I use his own words) “ both for the natural imbecility of the acute angles, as likewise for their uncomeliness.” As to the beauty or deformity of its appearance, that has nothing to do with our present investigation; in which, I only aim to point out; that in some cases these acute angles are not quite so imbecile, or the principles of the pointed arch, quite so devoid of strength, as Sir Henry Wotton, and some other writers on the subject, have been willing to make us believe, in their general censure of its use. Mons. Gautier has indeed asserted, that the pointed arch is stronger than a semicircle; in this assertion, he is however too general; as this is only true, in particular

cular cases; that is, when the radius by which it is described, exceeds the span in a certain ratio; in all other cases it is weaker, in proportion, as the centres, from which it is described; approach, or recede, from the ends of the horizontal line which forms its base. In an able calculation by Dr. Young, at this moment before me, of the equilibrations of the different arches, that have been used in our Gothic edifices; it is proved that if the radius of the pointed arch, be three-fourths of the span; or forms that arch which is called the sharp arch of the fourth point; the strength of a semicircle, will be to the strength of the Gothic arch of the same span; as 1257 to 1000. And if the radius be two-thirds of the span; or form an arch of the third point; the strength of the semicircle will be to the Gothic arch of equal span, as 1210 to 1000.

From this we see that the Gothic arch, whose radius is equal to the intervals between the pillars, is the weakest; and that, according as the centres from which it is described, move on either side in a horizontal line, the strength of the arch increases.

Thus in many instances it was very little inferior to the semicircle; and we find that we  
have



have not to blame them for the adoption of an arch, so totally devoid of the requisite strength, as we may have been led to suppose; for as their arches were generally constructed at the upper part of the cathedral; where they had only the weight of the roof to sustain, there was no great pressure immediately upon the point of the arch. Where there *was* an incumbent weight, we may generally observe that it was the practice of the architect to lessen it as much as possible, by windows and other perforations. Indeed, from the manner in which many of their largest buildings are constructed; where from the almost stupendous appearance, one would suppose, very thick walls and buttments were necessary for their support, the Gothic architects must have perpetually calculated the minimum of necessary resistance and solidity with great exactitude; and certainly deserve great credit, for the very considerable skill they have shewn, in thus aggravating the appearance of boldness, and yet rendering their structure secure by the manner of disposing the materials. Nor could this perhaps have been effected, but from the judicious method with which they lightened every part of the construction. All their vaulting was composed of a

G

skeleton

skeleton of hewn stone, forming the cross springers and other principal molded ribs; while the interstices were filled with materials of less weight; frequently with a cement; and, where it was easily procured, with chalk, as at Salisbury; where there are cross springers only, without any tracery work. Mr. Price, in his *Observations on this Cathedral*, says, “The groins and principal ribs are of Chilmark stone, but the shell or vaulting between them, is of hewn stone and chalk mixed together, on the top of which is laid a coat of mortar and rubble, of a consistence probably ground in a kind of mill and poured on hot while the lime was bubbling, because by this the whole is so cemented together as to become all of one entire substance.”

As to the assertion of the whole of their buildings being constructed of stones, so small as to be carried to their destined position by dint of manual labor; it is fully contradicted by several authors; who affirm, that most of their cornices and pinnacles were raised by means of pulleys, wheels, &c., and, that some of them were of immense weight: of which latter assertion we may even now have ocular demonstration. Taking the removal, and the raising of these large  
bodies

bodies then into our consideration ; we cannot suppose, but that the proper application of the BALANCE—the WEDGE—the PULLEY—and the LEVER, was perfectly known to them. Four mechanical powers, which have been proved fully competent, to raise any of those celebrated structures of antiquity, whose massive remains still strike the beholder with astonishment.

Their roofs were generally framed of a mixture of chesnut and oak ; timbers, then in most general use, and with which, in many of their cathedrals, they have burthened the walls with a great additional and unnecessary weight.\*

Their construction in this particular, is indeed deservedly censured ; as there was no necessity, either for the height of their roofs, or for the covering of lead, which must have added much pressure to their walls. This fault should have been particularly guarded against, as their roofs have no tye beams to steady their framed timbers. But although we must consider this as a great error, we must still give

G 2

them

\* It has been calculated that the several roofs of Salisbury cathedral, contain at a moderate computation, not less, than 2641 tons of oak ; a most prodigious weight when we consider the inferiority of the supports to those of other buildings.



them credit, for having in most instances, provided a sufficient butment to resist the additional pressure.

These roofs were generally constructed high, the rafters meeting at the top in an acute angle, and among the Gothic edifices this was the general rule for their form.

The roof of the church of Batalha in Portugal, as we are informed by the splendid publication of Murphy ; is constructed much flatter ; nor in this instance do I think the beauty of the general effect, at all spoiled by the alteration.

I should not have quoted this example, after having confined my observations within the boundaries of my own country ; but, that it was designed by, and principally executed under Mr. David Hackett, a native of Ireland, who most likely, attained his knowledge from English professors. We may therefore consider the church of Batalha, as the production of British genius, transplanted to a foreign clime.

Among their roofs however, we often find the construction of some, particularly worthy of admiration. I mean, such as those, which were generally used in large halls ; where the rafters and framed timbers, were wrought into  
the

the only ornaments which graced the ceiling. Westminster Hall is an admirable example of this kind of roof. The rafters are all carved, and the parts, in which the braces and smaller timbers frame into each other; are hid by a sculpture in the form of an angel; most judiciously placed, both as an ornament, and as giving an additional strength to the roof.

The height of their spires, we must also consider as another proof, that they must have brought their principles of construction to a great degree of perfection. The first, of any consequence,\* is supposed to have been erected in the year 1222; which was, like their roofs formed of timber, and covered with lead: they soon however used stone in these buildings, and we find that most of those subsequently erected, were composed of that material.

As to the proportions of which the cathedrals were generally formed; Murphy, in a transverse section of the Batalha, has deduced them, from the same standard that the ancients deduced the proportions of their column, that is, from the human figure. And to delineate his idea with correctness, he has in this section, ingeniously placed the outlines of a

G 3

man,

\* The spire of old St. Paul's cathedral.

man, with one hand stretched above his head, touching the ceiling of the centre aisle, while the other is extended horizontally, till it meets the external wall of the side aisle; and from a comparison of these proportions, they appear to resemble those of some of our own ancient cathedrals.

During the thirteenth and fourteenth centuries, most of the exterior of our Saxon and Norman churches, were transformed into the Gothic; which by this means became the general characteristic, of almost every religious edifice in the country. Some of them were totally new faced with stone; but others were merely altered, by cutting their arches to a point; and by the addition of porches, pinnacles, and statues. This, almost general transformation, completed the victory of the Gothic over every other style of architecture in the kingdom.

From the end of the fourteenth century, no remarkable variation can be discovered; except as to the point of the arch; which was made more acute or obtuse, according to the fancy of the architect. Towards the end of the fifteenth century, no mixture of the Gothic with any other style had taken place; although this was a common error in the succeeding years.



years. At this time, the depressed or scheme arch was in the most general use, and in many instances the lines were but slightly curved.

Gothic architecture, at this period, had been at the height of its perfection, for nearly two centuries; and if we refer to the historical accounts of the styles of this art among the ancients; we shall find that none arrived at such a great degree of perfection in so short a period. The rapidity of their progress, is indeed the more to be wondered at, when we consider the general ignorance of the times in which it was invented; an ignorance, with which every architect had to contend. We are principally indebted for the construction of our ancient cathedrals to ecclesiastical characters; who, amid their theological studies and disquisitions, still found some time to dedicate to the attainment of science, and the pursuit of the liberal arts: and as the laymen were in general, at that early period, too much engaged in warfare and other employments, which kept them in total ignorance of the sciences, so that none of them were supposed capable of becoming architects; these ecclesiastics paid particular attention to the erection of their monasteries.

They frequently drew the plans, and superintended their execution ; and the accuracy with which they have in many instances ascertained the maximum of their pillars, arches, and buttresses, proves, that they were not so ignorant of the science, as some have chosen to assert. There were no doubt, many, who not having attained any degree of excellence in their art, were glad to avail themselves of some approved model ; and this obviated the necessity of any new calculations respecting the ratios of force and resistance.

If however, amid the general ignorance of the age in which it was invented, this style attained to such a degree of perfection ; what progress might it not have made, had its inventors been assisted by a general dissemination of science.

But, from this history of its progress, and of the perfection to which it had arrived, we must proceed to the principal circumstances which occasioned its fall.

We have viewed it in all its splendor ; have admired its various decorations, and for a time rejoiced in that superiority, which it had attained, over the massive characteristics of the Saxon and Norman styles ; and must now pursue

sue our subject, when its beauties were no longer courted by the artist ; and when its pendent ceilings and embroidered roofs no longer called forth the admiration of the beholder.

At the time, when Henry VIIIth conceived his aversion to the religion and superstition of the Roman Catholics, and began the reformation ; every thing, that in the least degree tended to the support, or to recall the remembrance, of this religion, also fell under his displeasure ; and it is to this circumstance, that we must in a great measure attribute the abolition of a style in architecture, so long used in the cathedrals which monkish superstition had raised.

The famous Dissolution Act was passed to satisfy the rapacity of his courtiers, who longed to possess themselves of the monastic revenues ; and even the two universities were at first included in it : these edifices, however, sacred to science as well as to religion, were saved among the general dilapidation, which many of the monasteries and cathedrals experienced.

As, in the earliest periods of the dissemination of Christianity among mankind ; the first general reformers of the idolatrous principles of the ancients ; in that intemperate zeal,  
by



by which their reformation was characterised ; raised to the ground so many of those beautiful temples, in which so much genius and labor had been expended : so, did the desolating hands of those reformers, who succeeded Henry VIIIth, destroy many of the most beautiful specimens of this style of architecture, and dismember most of the ancient cathedrals of the only things that rendered them worthy of admiration.

— “ Righteous havoc cov’ring distant fields  
 “ With the wrought remnants of the shatter’d pile,  
 “ While through the land the musing pilgrim sees  
 “ A track of brighter green, and in the midst  
 “ Appears a mould’ring wall, with ivy crown’d,  
 “ Or Gothic turret, pride of ancient days !  
 “ Now but of use to grace the rural scene,  
 “ To bound our vistas, and to glad the sons  
 “ Of GEORGE’S reign, reserved for fairer times !” \*

Having thus, though feebly, attempted to give some account of Gothic architecture † through

\* The Puritans in the time of Oliver Cromwell were famed for their dilapidation of ancient cathedrals ; particularly those of old St. Pauls and Canterbury.

In 1666 the fire of London, also deprived us of many specimens of Gothic, which were however happily replaced by Grecian architecture, instead of that mixed kind which had so long disgraced our public buildings.

† There is another species of Gothic, very different in its characteristics

through its various stages of progressive improvement; till the introduction of the Roman and Grecian completely annihilated its pretensions to the favor of artists in this country: and also to consider some of its various parts individually, and scientifically; I shall next proceed to consider its beauties, as to their effect upon the imagination. And this I do, not with the least idea of giving it any superiority to, or denying the merits of any other style; but merely to vindicate it from the unjust censures of those, who do not, or at least pretend not, to admire any thing, that cannot be traced to a classical original.

I am induced to make this attempt at its vindication, by the following observation; in which, speaking of the superiority of the ancient architecture over the Gothic, the writer says—" For proof of this, without travelling far  
" abroad, I dare report myself to any man of  
" judgment, and that has the least taste of  
" order

characteristics from that which I have attempted to delineate, and which will form a subject for another Essay. This species has been denominated Castellated Gothic, and was generally used in that age when the feudal system rendered it necessary that noblemen should possess fortified castles. This style bears a much greater resemblance to the original Saxon and Norman architecture.

“ order and magnificence, if after he has  
“ looked awhile at King Henry the Seventh’s  
“ chapel at Westminster, gazed on its sharp  
“ angles, jetties, narrow lights, lame statues,  
“ lace, and other cutwork and crinkle-crankle,  
“ and shall then turn his eyes on the banquetting  
“ house built at Whitehall by Inigo Jones,  
“ after the ancient manner; or on what his  
“ Majesty’s surveyor, Sir Christopher Wren,  
“ has advanced at St. Pauls, and consider what  
“ a glorious object the cupola, porticos, co-  
“ lonnades, and other parts present to the be-  
“ holder. I say, let him well consider, and  
“ compare them judicially, without partiality  
“ and prejudice, and then pronounce which of  
“ the two manners strikes the understanding as  
“ well as the eye with the more majesty and  
“ solemn greatness; though in so much plainer  
“ and simple dress, conform to the respective  
“ orders and entablature: and accordingly de-  
“ termine to which the preference is due; not  
“ as we said, that there is not something solid,  
“ and oddly artificial too, after a sort.”

It is certainly true, that the chaste simplicity of the ancient architecture; the boldness of its various parts and their just appropriation; particularly in the beautiful examples above-mentioned;



mentioned ; cannot fail to call forth the admiration of every man possessed of the least taste and judgment. But still, surely nothing but a determined prejudice against Gothic architecture, can ever assert that it is so totally eclipsed as entirely to lose its pretensions, at least to some portion of praise.

Who can behold the grand outline of the Abbey at Westminster, and not feel its effect upon the imagination ! Or who can inspect the various parts of its minuter composition, and deny the science and ingenuity that must have been exerted in its construction !—I feel convinced, in my own mind, that no one, who is not, either influenced by prejudice, or who does not view it with the fastidious determination to be dissatisfied, can refuse this structure a tribute of their admiration.

Various have been the enquiries into the true principles of taste ; and into the origin of our ideas of the sublime and beautiful : abstract terms—intended to express those feelings of wonder and admiration excited in our minds by the splendid works of nature and art.

Burke has well spoken of the first ; when he describes it as being too volatile to bear the chains of a definition—and, as far as such abstract

abstract terms will admit of explanation and description ; he has traced the origin of our ideas of sublimity and beauty.

Vast and magnificent works, he allows in the first place to be sublime, and in his progress through this abstract disquisition, he says—  
“ I think that all edifices calculated to produce  
“ an idea of the sublime, ought rather to be  
“ dark and gloomy.” Now, most of our Gothic structures possess both these qualities which Burke thinks requisite to create ideas of sublimity : and that kind of gloom in which the broad aisle of a Gothic cathedral is enveloped, by the stained glass of the pointed window, seems to be that very gloom which our author intended to describe. It softens the shadows, and throws a rich mellow tint over the marble pavement and embroidered ceiling ; giving that indescribable effect, which almost irresistibly leads the mind to solemn meditation.

Murphy, speaking of the effect of the western window in the church of Batalha—says that “ The fathers usually assemble in the choir  
“ to chaunt the evening service, whilst the  
“ myriads of variegated rays, which emanate  
“ from this beautiful window, resemble so  
“ many

“ many beams of glory playing round them.”  
It seems indeed

“ From the broad window’s height  
“ To add new lustre to religious light,  
“ To bid that pomp with purer radiance shine.”

We have ever been used to judge of the beauty and sublimity of an object, according to its effect upon the imagination. And who is not affected with the solemn and impressive grandeur, that must be inspired by the view of those internal beauties of a Gothic structure. The high raised arches—massy pillars—and above all the “artificial infinity”\* of the pendent ceiling, and numerous intersections of the groins, studded with its various ornaments! What imagination, that is not completely chilled by the coldest apathy; can behold these beauties, without feeling the effect of their grandeur and sublimity, and owning the almost awful solemnity of their appearance, particularly when the immensity of the undertaking is considered!

Who,

\* I am aware that I here use Mr. Burke’s term, rather in a different sense to that in which he applies it. But, it certainly appears as applicable to the mazy windings of the tracery of the Gothic ceiling as to any “uniform succession of great parts.”



Who, with these ideas, can contemplate, without admiration these works of art; that seem to have taken ages in their execution! or listen, without owning their power over the imagination, to those ceremonies of religion, rendered more impressive by the solemnity of the cathedral,

“ Where, through the long drawn aisle and fretted vault,  
“ The pealing anthem swells the note of praise!”

*finis.*

AN ESSAY  
ON THE  
SITUATIONS AND ACCOMPANIMENTS  
OF  
VILLAS.

By JOSEPH WOODS, Jun.

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*Read February 20, 1807.*

IN any subject where some fixed principles are established which may be appealed to with confidence, a writer may be sure that if he cannot make a good essay, he may at least be able, by care and assiduity, to avoid any gross error; and if he state his positions clearly, and expose correctly the grounds on which he formed them, on a subject of practical utility, his paper can hardly fail being of some value. The case is very different in what I have undertaken to treat upon; hardly any care will afford me a perfect security, even against absurdity; the grounds themselves, on which I have to establish

blish my opinion, are so vague and uncertain, that to expose my view of them correctly, may be only to expose my own incapacity.

That I might not be chargeable with any imperfections which would be easily avoided, I have read the works of Price, Knight, Rep-ton, and two or three other authors, or at least such parts of them as seemed to have any connection with the title of this essay; for the express purpose of incorporating what I approved with my own observations, but without thinking it necessary to drudge through every book which has been written on taste.

In these writers I have accordingly found many just and varied views of the subject though mixed with error, and if their ideas or even almost their words, should happen to occur in this paper, without any further acknowledgment, I hope I shall not be deemed a plagiarist; for the knowledge I have obtained from them is so united with what I have gained from other sources, that I should not now be always able to point it out.

A celebrated writer \* has drawn a strongly marked line between sublimity and beauty. The character of villas is, or may be, very various, but the gradation is so gentle, from the

\* Burke, Essay on Sublime and Beautiful.



the character of the cottage to that of the palace, and it is so impossible to draw a distinct line between them, that I am inclined to conclude, that though the emotion they produce may differ in *species* it is always of the same *kind*; that the effects, however *varied*, are still *similar*; and that if of sublimity and beauty, the one acts by relaxing, the other by exciting the nerves, the emotions experienced on contemplating beautiful and well-placed houses, must either always relax, or always excite them. As, therefore, the word *beauty* is often used to denote whatever is pleasing to the eye, and as, likewise, it can hardly be maintained, that all houses ought to aim at sublimity, I shall use the former word as a general term to express the nature of the emotion intended to be conveyed by the architect and landscape gardener, to the beholders of their works.

I believe it will not be objected to me here that some of both sorts of artists have aimed at ugliness, (though perhaps the inspection of their works might almost excite such a sentiment), but perhaps it may, that some architects have rather attempted the *picturesque* than the beautiful. But though some authors have conceived, that picturesque objects are not

always the most suitable for paintings,\* and that objects not picturesque are sometimes preferable to those which are so, yet all agree, that an object which will not please in a well-painted picture cannot be picturesque; I shall, therefore, take the liberty of ranking the picturesque also among the modes of the beautiful. My object, then, is to enquire what situations, and what accompaniments, are to be chosen to make a house appear *beautiful*.

The word *Villa*, as generally used, will perhaps neither include an ornamented cottage nor a palace. I wish it to include both, if in the country; and though I thus rather extend the term beyond its usual acceptation, yet I could think of no other that would not be more objectionable, and therefore venture to hope, that the Society will indulge me, by accepting the word in the sense I wish to use it. I would define *villa*, “ a house in the country, apparently calculated for the residence of a gentleman;” I say *apparently*, because I conceive that whether it is so or not, is of little consequence. My business, at present, is only with the outside.

Of

\* Uvedale Price.

## OF COTTAGES.

I do not attempt, in this Essay, to give any directions for the cottages of the labourer: my cottage is a species of villa, and my object to point out what ornaments and accompaniments may be introduced, to mark it as the residence of a gentleman, without destroying its character as a cottage.

It is evident, that a cottage is not a place in which the splendours of life can be exhibited to advantage: the ideas it suggests are those of quiet, seclusion from the world, and domestic comfort.

That the taste of a gentleman may lead him to prefer these to the bustle of public life, is neither unreasonable nor uncommon, and if only for a short time he prefer retirement, I know no reason why that retirement should not be to a cottage. The cottage of a labourer may occupy many situations, but that of a gentleman must be secluded. No appearance of splendour or magnificence, no affected imitation of sublime objects, is admissible; but every thing which can convey the ideas of neatness and comfort is to be sought for. Whether it be built of stone, brick, or wood, or covered with thatch or slate, is of no consequence.



The character of the cottage may be preserved with almost any materials, but no costly ornament may appear, no pointed windows, to mimic those of cathedrals: all must be simple, and unassuming. The projecting porch will furnish an appropriate shelter to the entrance, and the trellis, covered with creeping plants, and the walls with fruit trees, will break the uniformity of colour, and give a finish to the whole.

A cottage ought to be placed in a garden; this seems to be absolutely necessary: and this garden may be surrounded by pales or a hedge; but I think walls are better avoided, as they will hardly seem to belong to the edifice, and the colour of the hedge, or the pales, is so much more modest and unassuming. Adjoining to the garden an orchard is desirable, and one or two meadows; but no park, no dressed grounds: these are appropriated to dwellings of greater magnificence. If it is added, that the whole should be in a sheltered situation, shaded by trees, but not buried amongst them, all that is necessary to be said on cottages will be completed.

The cottage and the *villa*, properly so called, are widely separated, but every step between  
them

them is capable of character and of beauty. The cottage itself may increase in size, in ornament, and in proportionate height ; the garden will, at the same time, extend itself, and walls will be substituted for pales and hedges. As this proceeds something of a pleasure-ground may be added ; but no park : that belongs to the villa, and till the character of the villa is completely introduced in the mansion, no park can appear as an appendage to it.

In this intermediate class we may enumerate the *box* ; a name extremely appropriate, but to which no very delightful ideas are attached, except by those who build them. The object in them appears to be to unite to neatness and comfort, prospect and some display of wealth. Thus it is not capable of the seclusion of the cottage, and does not reach the dignity of the villa ; nor can it possess a happy medium between the two, for it requires all the display of a villa, without its appearance of respectability.

### OF VILLAS,

*PROPERLY SO CALLED.*

I did not, at first, intend to treat in this Essay of the forms of villas, nor do I now wish

to enter into detail on the subject; but some observations are necessary, because both the situation and accompaniments have considerable relation to them.

I have heard, that one of our architects has declared his idea of the perfection of form in a country residence to be a cube; and if we reason from what we see, we shall be tempted to conclude, that his opinion is very prevalent. Uvedale Price has compared such houses to brick clamps, and I think correctly; but he gives the preference, though in a slight degree, to the *house*: and in this I think he has erred; for the sloping sides, and apparent solidity of the brick clamp, give it an air of stability, and even of magnificence (if we could divest ourselves of certain associations of meanness) that the house with its upright walls and large openings never reaches. The roof, too, by indicating the hollowness of the structure, injures the effect.

In the sketch herewith offered to the Society, I have endeavoured to improve this character of firmness, in a house of this sort (almost the only one of which it is capable) by making the size diminish upwards, introducing small openings, and giving the roof so small  
a slope,



a slope, as hardly to interrupt the idea of solidity. To give it more importance, it is set upon an extended basement, which would contain the offices, with projecting walls to support the earth in front. This form seems suitable to a house, where a view all round is desirable, and would be well placed on some insulated hill, rising about a mile or two from the base of some loftier range, or on some knoll, advancing considerably from such a range into the lower country; for I believe it would be impossible to fix any moderate sized house on the top of a hill, the highest in the neighbourhood, so as to look well, even if *that* should not be very high; and a mile, or mile and half, is distance enough to enable one to have views of great variety and beauty.

It is true, that a very large house, such as might without impropriety be termed a palace, will be extremely well placed, if situated so as to domineer over the whole country; but it must be of a size sufficient to form a centre to the whole scene, and ought not merely to occupy the top, but should, with its offices and artificial accompaniments, stretch down and cover great part of the hill.

The form of the Grecian temple is very  
simple,

simple, but the striking inequality of the sides renders it less so than one of the clamp-shaped houses, even when considered merely as to the outline. If we attend to the detail, we shall find still more difference, as the most beautiful effects are produced by the forms of the columns, and their position round the building. The situation, when not in cities, is usually on the top of some naked, rocky hill; and, it must be confessed, that in such circumstances they are exceedingly beautiful, and even appropriate, for the severe simplicity of the building seems to accord with the naked majesty of the hill. The Ionic temple on the Ilissus is not surrounded by columns, nor seated on any eminence, yet its effect is not without beauty; but perhaps the nakedness of the country, and a certain wildness it possesses, and from the nature of the soil must always have possessed, may admit corresponding nakedness in the building better than more luxuriant scenery. Such an exposed appearance, however, though it may suit the character of the country, and unite with that of a temple, is totally inconsistent with that of a peaceful residence.

The next form, in point of simplicity, adopted by modern art, at least of those worth notice,

notice, is produced by the addition of a portico. These usually form a parallelogram on the plan, with the portico on one of its sides; but it is sometimes added to the end. In either case, the improvement is very great and obvious, both as it produces some degree of intricacy, and by its contrast of light and shade gives importance to the center, and fixes the eye on the most beautiful part of the building; but still, if without offices, and without accompaniments, the house is in danger of looking as if only stuck into the ground for a time, till a better situation could be found for it.

In proceeding from simplicity to richness and variety, in the forms of houses, the next step is the addition of wings, lower than the body of the building. These either may, or may not, contain the offices: with that I have at present nothing to do. They may either be on a continued line with the building, or may advance or fall back, angularly, or in curved lines; they may be on a level with the building, or placed lower; they may be simple; or they may vary in themselves, in position or height. But before treating of these, I will just mention one mode of varying the outline, which I believe is now never put in practice.

That



That is by wings (I know not what else to call them) of the height of the centre, and projecting from it at right angles. Such a form I do not recommend, yet I think it capable of considerable beauty. The houses built thus are always lofty, and with their dwarf walls, vases, flights of steps, and richly wrought iron gates, have an air of *stateliness*, which it would not be easy to attain, even in the more perfect modes of architecture, especially if accompanied, as I believe they always were, with rows of elms, the most stately of all trees. And so far from reprobating the taste of our ancestors in this respect, I am inclined highly to applaud it. Their manners were stately, their dress was stately, they built stately houses, and they accompanied them with avenues of elms, the tree and the disposition, of all others, best suited to their purpose.

I have considered wings as lower buildings, extending on each side of the center. A lower building, however, may extend backwards, and contain the offices, and though it will not be visible in front, yet in an angular view such arrangement may not be without merit; at least, if such a thing be added to a square house, it will be better to make it fit to be seen, and bring it

it into view, than to hide it in thick plantations, as is now usually done.

In considering the arrangements of wings, I shall proceed from the simpler to the more complicated, going through the angular before I touch upon the circular forms.

Wings are, I believe, never added exactly on a line with the front; they fall back a few inches, at least. But I shall not consider a break of one or two feet, as sufficient to exclude a building from this division, as hardly a perceptible diminution of the lines in perspective is produced by it, or a mass of shade, sufficient to give it the peculiar character of the house whose wings fall back. With this allowance, it will be found that the arrangement is by no means an uncommon one; and that it is susceptible, not merely of considerable but of very eminent beauty, any one may satisfy himself by going only to Wanstead-house, a villa which has few equals in external appearance, and I had almost said no superior, in this country.

It would be difficult to place the base of a wing, continuing on the line of the front of a building, lower than that of the principal edifice. Steps, or a terrace, or something must appear, which will unite with the centre, and  
give

give it a lower base. Where an order is introduced in each part, that of the wing may be placed lower, without impropriety, and perhaps with advantage, and in some degree produce the effect. Wings falling back has been strongly recommended\*, but I think not justly : they do not come forward enough to do their duty ; to unite with the building, and take off the appearance of baldness, and nakedness. Where other artificial accompaniments are used, they may, however, unite to them, and form a very good whole. If they are placed lower than the front, they will have still less effect : but, even then, they may unite with other accompaniments, and their very insignificance may possibly give a more showy appearance to the centre.

Wings falling back may be on a higher level than the principal building, a circumstance which could not be admitted in any other disposition. In the sketch that I have given of wings advancing in front, the Society will probably recognize the outline of a design I had the honour to present to them for a public library. They break the lines of the centre, and give an apparent shelter to the entrance ; but

as

\* Repton.



as they hide its absolute height, and in some situations prevent the view of the principal part, they may, perhaps, be objected to, as diminishing its importance. To me, I confess, it appears they would rather increase it, by provoking a comparison between their smaller parts and those of the centre : at any rate, they much increase the variety ; as every change of distance and direction would alter the comparative size of the parts and their combinations, and the general outline. If they are placed somewhat below the principal part, it would, I think, be an advantage, and it is in this circumstance that I have endeavoured to give the Society some idea of its effect.

Under the first circumstance, the arrangement is by no means uncommon ; nor indeed is the second, as far as that is produced, by putting the order of the wings on a lower basement : at least they are frequently exhibited in the designs of Palladio, and in the *Vitruvius Britannicus*. Vanbrugh has introduced something of this sort into all his principal edifices, and though his detail is usually very bad, yet the general tribute of admiration paid to the effect of his buildings, entitles him to be considered as good authority in the formation of a whole.

Wings

Wings advancing from the house will frequently require a small piece on a line with the centre, or nearly so, to unite them to it, so that their form is not quite simple: but in those I have hitherto considered the height will be the same. If this piece be considerably extended, the character will be altered. Another source of variety arises from this connexion being placed back, instead of nearly in a line with the principal building.

One more form, giving sufficient character to be worth notice, occurs to me in buildings whose wings are of a uniform height: it is that where each wing forms half an H, as in plate 4, fig. 1. As this form would conceal the centre more than any before noticed, it is necessary that the proportions of the wings should be smaller. Houses may also have secondary wings (if the expression be allowable); buildings subordinate to the first wings, as these are to the body of the house. Every variety of simple wings above enumerated may be further varied by the addition of these secondary wings, which, like the first, may fall back, or be on a line with, or advance before, the others; or may have one elbow, as described in the simple advancing wings, or two, like those of the  
house

house with half H wings. The addition of these subordinate wings increases, in no small degree, the variety and magnificence of the whole; but their disposition, though considerably important, is less so than that of the principal wings, and to enumerate them would extend this essay to an unreasonable length; for not only secondary wings, but others subordinate to them, may be employed, or perhaps even still farther. But there is danger of losing simplicity by going too far, and presenting to the eye a mere mass of detached buildings, instead of one uniform whole. Houses usually have two wings, but four are sometimes introduced, and when the house is exposed on all sides seem almost necessary.

Instead of adding lower buildings to the extremities of wings, some architects have added towers to them. This, I confess, does not please my eye; but I suppose it has that of others, or it would not have been so frequently repeated, and I know no reason why it should be absolutely prohibited.

The simplest circular wings may be disposed four ways: a quadrant receding, *P. 4. fig. 2*; a quadrant advancing, *fig. 3.*; a semicircle, on the line of the centre, *fig. 4*; a semicircle

I                      advancing,



advancing, *fig. 5*. These, without varying in their height, may be combined with straight wings in many ways; and if secondary wings be admitted, the combinations are all but infinite, and that with perfect uniformity, and without transgressing the strictest principles of architectural composition. When this circular form is admitted into a composition, I think it should not be only in one situation, but ought to be repeated; at least, if the building have much extent. Perhaps it will be better, where all the parts are straight lines, to have the principal building an oblong, and not a square; and, on the contrary, where curved lines are admitted, to have the centre square and crowned with a dome. Thus, each will unite with its subordinate parts, and a noble simplicity will mark the one, while a rich and splendid magnificence characterizes the other.

When I contemplate the inexhaustible variety of forms which may thus be produced, the difference of character and expression they will admit, and when I consider further, that they are not far fetched and extravagant, but obvious to all who will take the trouble to think on the subject, and that many of them have been used, I am astonished that any one should  
have

have thought it necessary to build irregular houses, for the sake of variety and picturesque beauty. If, indeed, by picturesque beauty be understood beauty calculated to please in painting, one would think that the example of such artists as Claude and Poussin might be pleaded as sufficient authority for regular architecture; but if we chuse to understand by *picturesque beauty*, that which will please in painting but not elsewhere, it may be better to pause, and consider how far it is worth while to build houses merely for the sake of having them painted.

Having thus pointed out the principal forms of Villas whose architecture is correct; (for of the extravagant and short-lived whimsies of the present day I do not attempt to treat;) it is necessary to advert to their accompaniments. After what has been said of the intermediate styles, it is needless to mention that a park, or at least dressed grounds, are absolutely necessary to complete the idea of a villa. The disposition of these does not come within the plan of this Essay; but between them and the house itself, it is still desirable to have something which, partaking of the character of each, may serve to unite them together, and give them an apparently indispensable connexion.

In this country, the accompaniments of villas seem never to have been scientifically considered. In Italy, perhaps, the case is different: at least we read of them, as if they had been a point considerably attended to; but whatever they may be I am unable to profit by them, as I cannot meet with any thing like a description, much less with such a particular account as would communicate much instruction to myself or to the Society.

Modern practice would place the bald and unvaried villa on the ground without attempting to unite them. The more intricate forms I have recommended might be less improperly treated in this manner, as the wings will, in some degree, perform the office of accompaniments, and like the roots of a tree unite with the building, and seem to fix it firmly in its place. In very large edifices, detached buildings may be advantageously introduced as accompaniments, and obelisks or pyramids may, in a few instances, be happily employed; but the true and appropriate accompaniments of villas are dwarf walls, ornamented with vases and statues, and in large buildings with columns, or a range of columns may sometimes occupy the place



place of these dwarf walls, of which the approach to St. Peter's at Rome furnishes a magnificent example; but whatever they are, they should partake of the style of the buildings, and in their arrangement follow the general idea of that of its parts. They may proceed in direct lines from the building, as in figure 6; or with an elbow, as *fig. 7*; or with two elbows, as *fig. 8*; or there may be more than one pair, as in *fig. 9*. If the building has circular parts, these accompaniments may also be curved, as in *fig. 10*; or they may be partly curved and partly straight, composed partly of columns and partly of dwarf walls, as *fig. 11*.

A few years ago, to have ventured to recommend such embellishments would justly have been deemed a bold undertaking; but now, sheltered by the authority of Price and of Knight, an acknowledgement of partiality towards them is attended with no danger. One caution, however, seems necessary; they should never be quite plain. They are ornaments, and must be considered as ornaments, even when they serve also purposes of use. They may enclose a garden or court, or support a terrace; but as long as they are intended to appear as appendages to the house, they must

be ornamented : for a plain brick wall, or even a plain stone wall, will never be considered as ornamental. It is therefore desirable, that they should have moldings, as well as vases or statues, which are only put on the wall and do not make a part of it. Trailing plants may also, I think, be admitted as ornaments, in parts not too closely connected with the house.

Besides the artificial accompaniments of villas, it may be expected, perhaps, that I should say something of the natural ones, or at least of the principal one of *trees*. Of these we may chuse such forms, and place them in such situations, as will best suit our purpose. That the villa ought always to be accompanied by trees there can be no doubt. It is a defect for a building to be capable of being seen, without interruption all round : I almost doubt whether we ought not rather to make it a point that it should not be seen from any spot, without some part being hid, or some lines broken by the branches of trees. Trees, considered as accompaniments to buildings, may be divided into two principal classes, those with spreading, and those with ascending branches. The latter class seems to have been the favourite in the gardens of Italy, and one of our own authors\* has ingeniously ima-

\* Repton.

imagined them to be peculiarly suitable to the Grecian architecture, as their lines contrast with the horizontal lines of the buildings; whereas the lines of Gothic architecture having a tendency upwards, are better opposed by the horizontal branches of the English oak. Without pretending to decide on the truth of this theory, I think we may observe, that the spreading trees are out of their place in towns, where long rows of houses mark the horizontal lines in the strongest manner possible, and that upright ones seemed more adapted to this situation. But this may, perhaps, be owing to the ideas of gloom and dampness, associated with the larger trees, where they are thus forced almost into contract with the house; and yet no disgust is excited by the shelter they afford a cottage. I think, however, that close to a villa, which is the part I am at present considering, the trees of a spreading growth, though in themselves by far the most beautiful, should be sparingly introduced, and perhaps some foreign trees, such as the tulip-tree, the plane, or the acacia, would be better than those of our own woods, as the latter are more associated in the mind of an Englishman with the wildness of a forest, and besides, are apt to grow too large for such a situation.



The best situation for a villa is a gentle eminence or gradual slope, and if possible, sheltered by higher hills. The larger and more complicated the edifice, the higher may be the hill on which it stands, and the more country it may appear to command. An insulated hill of small extent will require a larger villa than an extended range of equal height. In the first instance, the hill will unite with the house, and seem to be fitted for it, and make part of the design; in the other, the house is merely placed upon it, and we do not expect the accompaniments to stretch all over it. The one may be sheltered in wood, to the other wood will appear subordinate. A house placed on the slope of a hill need not be large in proportion to the size of the hill, nor on the top of a small one, rising immediately from the base of a larger and almost united with it. And these situations, where the building is not very spacious, are perhaps preferable to the more detached eminence. It is only where the house occupies the summit, that attention to the proportion between the hill and the edifice becomes important.

There are two sorts of residences, which have characters of which it may be thought the  
Grecian

Grecian villa is incapable : I mean the castle and the abbey. The first, seated on some bold promontory, has a look of majesty and defiance, where a common villa would appear insignificant : and where a house, in such a peculiar situation, is desired, perhaps no form can equal that of the castle. But the disadvantages are numerous, and the situation itself cannot be esteemed a very favourable one for a peaceful residence. A castle is a building, both in form and situation, calculated for defence ; and if this idea be not preserved, the building becomes not merely insignificant but ridiculous. To gain this appearance, the outline must be unequal. Towers must project from the general face of it ; but they must not be large, as their purpose is to flank the walls : other towers ought to appear as forming part of the circuit of the inclosure. The walls must be thick, or at least appear so, and the openings small. This outline will necessarily render the internal of the edifice, in some degree, rambling and inconvenient. The rooms will be gloomy and irregular ; some few must be very large, or they will have no light ; but most of them will be small. The skill of the architect will, of course, be employed to obviate these inconveniences ;  
but

but they can hardly ever be entirely overcome, without some sacrifice of external propriety: and indeed the irregularity of the building will make it necessary to show some part from almost every other, and therefore if the inside do not preserve something of the same character, a want of conformity and design will be apparent. On the same principle, all the accompaniments must correspond. The terrace wall, its vases, and other embellishments, must give way to turrets and battlements. Even the approach should partake of the character of defence; it should appear capable of being well guarded, as steep as convenience will admit, and though the comfort of a dwelling, requires it not only to be perfectly safe but to appear so, yet circumstances of danger may be suggested to the imagination, and the frowning precipice above, and the gloomy gulf below, would prepare us for the martial appearance of the mansion.

On a sandy flat, or among gently swelling downs, when perfectly naked, a castle may perhaps be better than a villa, as its lofty inclosures will form a shelter within itself, and the nakedness may seem calculated for defence, where no bush, no sudden hollowness in the ground can give shelter to an ambuscade; but

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I can conceive no motive to induce a gentleman to chuse such a place for his habitation.

If the management of a castle be difficult, that of an abbey is still more so. In its character it unites to the seclusion and separation from the world, which ought to mark the gentleman's cottage, a degree of grandeur, or rather of sublimity, arising from the idea of its having been appropriated to the service of religion. The inside, likewise, ought to be severe and almost gloomy; for such is the character of the religion of monastic institutions, enjoining a renunciation of all the pleasures of the world, and a total devotion of the heart to God. The inhabitants of a castle may be supposed to desire and to enjoy the pleasures and the splendour of life; the inhabitant of the monastery ought to reject them all. Whatever is magnificent in his abode is appropriated to the service of his Creator, and ought to be evidently unfit for human habitation. Thus the character of the abbey must be sacrificed internally, to obtain the comfort of the villa; and for the sake of internal cheerfulness, the external appearance must, in some degree, give way. The incongruity, as soon as known, will tend to deprive the external of all its character, to excite disgust, and to destroy the  
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the emotions of beauty, which at first sight might have been excited.

I do not offer this Essay to the Society without a consciousness of its imperfections; but the subject is extensive, too extensive, perhaps, to be fully included in a communication of this sort, and amidst the pressure of business, and a state of health very unfavourable to application, I have done my best, and hope that my endeavours will be received with indulgence.

AN ESSAY  
ON  
DILAPIDATIONS,

*By JOSEPH WOODS, Jun.*

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*Read January 9, 1807.*

THE great uncertainty attending the surveys of dilapidations, and the very different value affixed to them by different surveyors; have made me think it desirable, to endeavour to point out some standard by which one might ascertain exactly, what (under the common forms of leases) came properly under the term *dilapidations*; and at what rate they ought to be valued. In attempting this, I have met with two important, and, I fear, insuperable difficulties; the first is, that most of the cases are referred out of court, or, if decided in it, are not thought worth recording. The other, the varying opinion of the judges, who



who have decided in similar cases so differently, I had almost said so contradictorily, that they seem to have considered the law on this point as entirely in their own breasts. What information I have been able to gain on the subject, I now venture to lay before the Society, requesting their indulgence for my deficiencies. I have, indeed, done little more than arrange, and collect into one view, what I could find on the subject in the second edition of Woodfall's Law of Landlord and Tenant; but the assistance of my friends Mr. J'Anson, Mr. Savage, and Mr. Turner, who have been kind enough to communicate their observations on the subject, and especially of the latter, who has taken the pains to examine all the authorities cited by Woodfall, has enabled me to render my essay much more perfect than it would otherwise have been possible for me to have made it. Still, however, there are some points, on which I cannot produce any authority, and am obliged, to set down opinion, instead of law. My object has always been to detail, what *is*, rather than what *ought to be*. The law as it now is, must be in all these cases, the rule of our conduct, and even if I were able to take upon myself the office of a lawgiver, I think that the accurate knowledge of the regulations

lations which *do exist*, and as far as possible of the reasons for them, is a necessary step to the understanding of what ought to be. It appears to me, that my subject is a useful one, but by no means generally interesting. As, therefore, I cannot expect to amuse, I will endeavour to avoid being tedious, by compressing what I have to say as much as possible.

It is sometimes the practice to begin with a definition of the terms about to be employed: my essay is little more than a definition: dilapidations are, however, taken generally, whatever at any given time, a house occupied by any other than its owner, is worse than it ought to be.

The owner of any tenement, who lets it on lease to another, has a right to expect that it should be delivered up to him, at the expiration of the term, in as good a condition as is consistent with the necessary decay and deterioration produced by time; and that the tenant should make good whatever it may have suffered by accident or neglect, and that, as well in what has been erected by the tenant, as in what was originally demised. If the tenant has failed in this respect, he is consequently bound to pay to the landlord, a sum equal to the difference in the  
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the value of the estate between what it is, and what it ought to be. This, I think, is the principle on which all demands for dilapidations are grounded.

In some cases, however, it appears that the tenant has a right to remove what he has himself put up. The essay will therefore divide itself into two parts. In the first, I shall endeavour to point out what deteriorations may be legally considered as the effect of time, and what are to be accounted dilapidations: in the second, I shall attempt to explain, what buildings and fixtures are the proper subjects for a charge for dilapidations; and what the tenant has power to remove.

If the lease of a house be granted for lessee to do with at his pleasure, the lessee is not at liberty to destroy or pull it down; (J. Doddridge 2 Rolls, R. 74, cites 17 E. 3. 18 E. 7); and as waste is partial destruction, I think he must be considered as bound to repair.

It appears (Woodfall 312, 2 Atk. 383) that a tenant for life shall be obliged to keep tenants' houses\* in repair, even if he be such,  
without

\* In the case cited, Lord Hardwicke overruled an exception to a master's report, by which a tenant for life without impeachment



without impeachment of waste, and the same takes place with a tenant at will ; for, the tenant bought, in justice, to restore the premises in as good a plight as they can be, consistently with such deterioration as is unavoidable ; but a yearly tenant (and by consequence a tenant at will) is bound only to tenantable\* and not to lasting repairs.

If no covenants are inserted in the lease; (Woodfall 312) the common covenants, to *repair, maintain, and uphold*, are always implied ; and the lessee is as much bound by them as if they were expressed.

If these covenants are expressed, the tenant is bound to keep the premises in repair, and if he should neglect to do so, the lessor, at the end of the term, may claim a sum of money for that purpose.

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ment of waste, was charged with several sums for the repair of tenants' houses on the estate. No authority is cited for this doctrine, and it rests intirely on Lord H.'s dictum ; and it would, probably (if it be law) only hold where leases had been granted, and not where a tenant for life; without impeachment of waste; had suffered a mansion house, &c. to fall to decay.

\* Tenantable repairs extend only to the finishing, and not to any part of the skeleton of a house, they include all the work of the joiner, plaisterer, and glazier, but not to that of the brick-layer and carpenter ; stopping out wind and weather are however included in tenantable repairs.

Whatever injury the tenant has done himself, or permitted to be done by others, to the premises, whereby the estate of the lessor is diminished, is clearly a dilapidation, and chargeable as such; whatever injury has taken place by accident, is also a dilapidation.\* It remains to consider the injuries occasioned by neglect.

The rule to be observed in determining what injuries are dilapidations, is that *fair wear*, without accident, is not a dilapidation; but, that wherever there is any degree of accident, it is one.

\* Woodfall is not very clear on the subject of accidents by fire; he says, p. 293, "If a house be destroyed by tempest, lightning, or the like, which is the act of Providence, it is no waste; and the statute 6 Anne, c. 31, enacts, that no action shall be prosecuted against any person, in whose house any fire shall accidentally begin; with a proviso that the act shall not defeat any argument between landlord and tenant." Again, p. 326. "At common law lessees were not answerable to landlords for accidental or negligent burnings; then came the statute of Gloster, which by making tenants for life and years liable to waste without any exception, consequently rendered them answerable for destruction by fire;" but, now, "6 Anne c. 31, the antient law is restored, and the distinction introduced by the statute of Gloster, between tenant at will and other lessees, is taken away; for, &c. &c." Yet, he adds, p. 327, "An exception of accidents by fire is now in many cases introduced into leases to protect the lessee, who would, as we have seen, be liable to rebuild in his covenant to repair." This is evidently contradictory, but it is now fully decided, that the covenant does extend to all accidents of that nature.

one. The difference between *accident* and *wear*, appears to be that the latter takes place gradually and insensibly, the former suddenly and perceptibly; thus the nosing of a step may be quite worn away, and it shall be no dilapidation; but if from any cause whatever, the nosing have been broken away, instead of worn, it is a dilapidation.

Perhaps this definition may be thought to leave too great a latitude to the word *accident*, as it includes circumstances that occur without any apparent reason, for their happening at that particular time rather than at any other; thus, if the timbers of a floor decay, the floor will perhaps give way, at a time when there was no particular stress upon it; yet, I think common language will justify me in terming such a circumstance an *accident*; and, besides, it appeared that I could express myself more clearly and concisely, by using the word in this manner. Wherever *accident* has taken place, not only the accident itself is a dilapidation, but all injuries arising to the building therefrom. I believe I shall be better understood if I mention a few particulars.

If a building be covered by weather-boarding, and the weather-boarding decay by age, as

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long as it forms an entire and complete covering, it is no dilapidation; but if it be broken, or fallen down in any part, it is a dilapidation; and if, owing to a neglect of repairing it, any internal work be injured, this injury is a dilapidation, although no further accident take place, for it is a consequence of the first accident. If a timber decay, supporting any part of the house, it is not chargeable as a dilapidation, as long as it continues a sufficient support; but if it give way, the tenant is bound not only to replace the timber, but also to repair all the damage done by its fall.

In external coverings the law seems somewhat stricter against the tenant than this rule would require, for if any thing decay for want of attending to the coverings, it is to be considered as a dilapidation, even if no accident can be supposed to have taken place.\* I am not aware

\* I have been inclined to doubt, from the expressions of Woodfall, whether in dilapidations, arising from neglect of coverings, the coverings themselves were to be estimated as such; his words are these, (Woodfall 293, Co. Lit. 53, 4 and notes) "waste may be done in houses by pulling them down, or suffering them to be uncovered, whereby the rafters and other timbers of the house are rotten, but the bare suffering them to be uncovered, without rotting the timber is not waste: so if a house be uncovered,

aware that this applies in any case, except in that of paint; but I believe any decay, arising from the neglect of painting is a dilapidation, but the paint itself is not one, unless by the covenant the lessee was bound to do it.

In one other trifling case, the rule here laid down has an exception, which is in favor of the tenant: broken glass is not a dilapidation, according to some surveyors, unless there be more than one crack in the pane; or according to others, while it remains sufficiently entire to exclude wind and weather, the first rule has the advantage of being the most precise, the latter of being the most reasonable. With this exception (and that of the neglect of covering before mentioned) the rule appears to be, as above stated, that wherever accident takes place, it is a dilapidation, but where the one does not occur, no charge can be made for the other.

Having ascertained what are dilapidations, (with respect to the premises acknowledged to be part of the landlord's estate) it remains to say

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"covered when a tenant cometh in, it is no waste in the  
 "the tenant to suffer the same to fall down." I have added the  
 last words, to shew that the expression "the bare suffering them  
 "to be uncovered" does not mean to "*remain* uncovered" but  
 to *become* so. But the decisions of the courts and the practice of  
 surveyors are decidedly averse to such an interpretation.

a few words, on the value of them, as chargeable on the lessee, at the expiration of his term. It appears that the tenant was bound to keep the tenements in repair to a *certain degree* but not to deliver them up as new. He was not therefore bound to use new materials, but only to leave the house as good, as it would have been, had no accidents happened, and the coverings been properly attended to. All therefore the lessor can claim, is a sum sufficient to enable him to effect this purpose. That the lessee had an opportunity of doing it at a cheaper rate than the lessor, is of no consequence, as by permitting the term to expire, he has lost that opportunity: nor is it of any consequence to the tenant, whether the money so demanded is applied, or intended to be applied, to the repair of the tenement; or indeed whether the tenement be in a situation in which it can be repaired with advantage; he was bound to give up, at a certain time, something of a certain value, and if that thing be of less value than it ought to have been, it is just, that he should pay the difference.

But as it is not easy to decide what is the market price of old materials, it becomes necessary to refer to that of new, as a standard; and as the claim of the lessor is greater in proportion  
as



as the premises have had less wear, it will not be just always to preserve the same proportions. If, for instance, a new house have been leased for six years, the owner may reasonably expect that no part of it should be much the worse for wear; whereas if it had been leased for sixty-six years, a considerable general decay must necessarily have taken place. Thus much must be left, ultimately, for the judgement of the surveyor; but I think that hardly any case could justify a demand of more than three-fourths of the new value, and that none would occur, in which one-fourth might not be fairly demanded. A covenant to leave the house in as good a plight at the end of the term, as when the lease was made, appears to be no stronger than a common repairing lease.\*

I now come to explain what are, and what are not, subject to dilapidations. It is evident, that whatever the tenant has power to remove during the term, cannot be justly chargeable with dilapidations; for if it be acknowledged, that by leaving them at the end of the term he relinquished his right to them, yet the claim of him in reversion can only take place at the time they are so left, and he must take them such as

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\* Woodfall 325 Fita Abr. T. cov.it f. 42 Esp. R. 590.

they are, as a gift from the tenant. If, therefore, we can ascertain, what may or may not be moved, we shall also ascertain, what are, and what are not, subject to claims for dilapidations.

The old rule is, that whatever is built upon the ground, or affixed to the building, are fixtures ; and I believe it will be best to consider this as the rule now, and to enumerate the exceptions. All that the tenant received from the lessor, he is certainly bound to restore in as good a plight as may be ; all that he builds, or puts up himself, that is fixed, he is also bound to yield up in good condition, to the lessor. But over what is not fixed, the lessor has no claim : thus the lessee may erect barns, or sheds, or any building, upon wooden blocks laying upon the surface of the ground, and take them down if he pleases without putting up any thing else in the place ; but if the barns are fixed into the ground, they become the property of the lessor. The first exception is, that all buildings erected for the purposes of trade are removable : thus not only ovens and coppers may be taken away, but workshops and manufactories may be removed, provided they were erected for that purpose merely. This exception seems at first only to have been in favour of wooden buildings ; but Lord Kenyon observed, in the case hereafter men-

mentioned, that a brick chimney would not prevent a tenant from removing a building, and decided that its being on a brick foundation would not do it; and though his opinion was not followed by Lord Ellenborough, yet that Judge did not decide on the cause before him, that the tenant had no right to remove the buildings, because they were of brick, which was the case, but because they were erected for the purposes of agriculture, and not for those of trade. In the case alluded to as decided by Lord Kenyon, the tenant was permitted to take away the buildings he had erected for the purposes of agriculture, though there was an express clause in the lease, that all buildings made by the tenant should be left at the expiration of the term. But it is to be observed, that though the subject was agriculture Lord Kenyon talked of nothing but trade, not attending to the distinction maintained by former and subsequent judges; and his opinion was in consequence neglected by Lord Ellenborough, in the decision of an after case of the same nature, who observed, at the same time, that the cause just mentioned had not undergone the subsequent review of Lord Kenyon and the rest of the Court.\* But as it is, perhaps, impossible  
to

\* In a case lately tried at Guilford, before Judge Grose, *The City of London v. Varnham*, an attempt was made to establish a



to draw any exact line between the purposes of agriculture and those of trade, as the barns of the farmer are as much intended to keep the corn for sale, as the warehouses of the merchant, it is not to be wondered at, if the decisions are not always consistent in this point.

This is the only exception with regard to buildings ; but of what are called fixtures, many are now permitted to be taken away, which were formerly considered to make a part of the house. Marble chimney-pieces may be removed, and partitions, and even wainscotting, if it have been put up with screws. It is to be remembered, that in all cases the lessee is obliged to leave the premises in as good condition as if his improvements had never taken place ; thus if he pull down a wooden chimney-piece and put up

a

difference between buildings which could be used only for the purposes of trade, and those which, though built and used for trade were yet convertible to the purposes of agriculture. Varnham had erected and removed buildings of both descriptions, to the value of £1400, of which those which might be used as barns or granaries were estimated at £1000, and for this sum the action was brought ; but though the amount was not disputed, the Jury gave a verdict for only £300 : thus fluctuating between two opinions, and deciding in a manner irreconcilable with either. I have not however, complete confidence in my authority as to particulars, and there may perhaps be some important inaccuracy in this statement. At any rate, so arbitrary a distinction, and an inconsequent verdict, can hardly be pleaded as a rule for future decisions.

a marble one, he is bound, on taking the latter away, to replace the former, or one of equal value ; if he put up a partition and take it away again, he must repair any damages which the adjacent work may have suffered by that means ; and with this restriction, I believe, almost all *fixtures* may be removed during the term, unless there are express covenants to the contrary.

J. WOODS, JUN.

*Prints.*























Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.

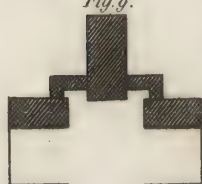


Fig. 10.

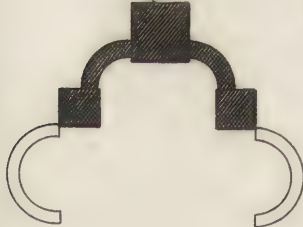
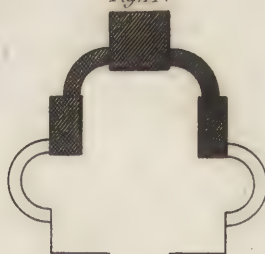


Fig. 11.





*Messrs. Middleton & Bailey  
to  
Charles Barry*

**ESSAYS**

OF THE

**LONDON**

**ARCHITECTURAL SOCIETY.**

WITH FOUR PLATES.

*PART THE SECOND.*

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1810.



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## ADVERTISEMENT.

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**THE** members of the London Architectural Society are happy to offer to the public a second volume of their Essays, which they hope will not be found unworthy of its approbation. It was their intention to engrave a Selection of Designs, but the great expence of the undertaking has at present deterred them, and they have contented themselves with the publication of Mr. Aikin's interesting comparison of the Grecian Dorics, in imperial folio.

Every lover of architecture heard with pleasure of the recommencement  
of

of the lectures on that subject at the Royal Academy, and felt the disappointment of their sudden interruption. Though deeply sensible of their own deficiencies, the members of this Society have determined to give a few lectures on the subject in the course of the ensuing winter.

*May*, 1810.



AN ESSAY  
ON  
*MODERN THEORIES OF TASTE.*

BY JOSEPH WOODS, JUN.

---

*Read 1808.*

My object in this essay, is to bring together in one view, what has been said by different authors on the subject of taste, especially as applicable to buildings; and to point out as far as it is in my power, the merits and errors of each. The plan therefore I have adopted, is to examine these authors one by one; to give a general outline of the system of each, and of the argument by which it is supported; to enter more into detail, on its application to buildings; and to note the principal objections which have occurred to me.

The first author I shall notice, is Hogarth; who, in his *Analysis of Beauty*, seems to think that in a certain curved line he has discovered an infallible nostrum for the production of

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graceful

graceful forms. The chain of reasoning is not very clearly made out; but his chief positions are, that the sources of beauty are fitness, variety, uniformity, simplicity, intricacy, and quantity. The first of these has nothing to do with his theory, for he does not plead the fitness of his magic line; and as it may be of any length, quantity does not properly come into the discussion. The four that remain may be reduced to two, variety and simplicity; by the just union of which, perfection is attained. The following is the outline of his argument.

“That variety is beautiful, may be fairly concluded from the great variety of nature in the ornamental part of the creation. The diversified shapes and colours of many flowers, shells, and insects, seem of little other use than to entertain the eye with the pleasures of variety. The hair of the head too, pleases by the variety and intricacy of its forms; it also serves to shew the advantages of simplicity; as when wisped and matted together it makes a most disagreeable figure.

“To uniformity, the author is not inclined to attribute much effect in the production of beauty; and considers it rather as pleasing by conveying ideas of fitness or utility, than from  
any

any merits of its own. And the chief advantage of simplicity, is that it increases variety; for the head of hair when wisped and matted together, no longer presents any of the varied masses into which it is otherwise disposed, but is every where the same; and every surface too much ornamented, loses its variety when the whole is to be taken in at one view.

“ In applying these principles to lines, it is to be observed, that strait lines vary only in length, and therefore are least ornamental.

“ That curved lines, as they can be varied in their degrees of curvature, as well as length, begin on that account to be ornamental.

“ That strait and curved lines joined, being a compound line, vary more than curves alone, and so become somewhat more ornamental.

“ That the waving line, or line of beauty, varying still more, being composed of two curves contrasted, becomes still more ornamental and pleasing.

“ And that the serpentine line, by its waving and winding at the same time different ways, (so that it cannot be expressed on a plain surface) leads the eye in a pleasing manner along the continuity of its variety.” As far as these extracts proceed, the work is ingenious; and per-

haps most people will agree with the author, as to his principles, though they may occasionally differ in detail ; and especially may not be willing to make beauty so wholly dependant on variety : but in his determination of particular lines of beauty and grace, he will have few followers, as he has no argument ; and indeed the subject is incapable of any argument except what is drawn from forms of acknowledged beauty. That such lines are exhibited in the most admired statues of antiquity, is all that can be said in favor of the hypothesis ; and though this is certainly a great deal, it is far too little to establish a general rule to be applied to all sorts of objects.

The next writer to whom I wish to draw your attention is Burke ; whose brilliant imagination, and impressive style, seem to have been able to direct the current of popular opinion, and to persuade following writers, even of great eminence, to take things for granted, which have no foundation in truth or nature ; and which, even in his inimitable book, have scarcely the shadow of an argument to support them. He divides the pleasing objects of sight into two classes, the sublime and the beautiful ; the latter are small and weak, smooth and  
gently



gently varied, and act by relaxing the fibres ; the former are large and strong, with abrupt variations, and act by bracing the fibres. These feelings it seems to me evidently impossible to unite ; whatever is added of beautiful to the sublime, can only act by diminishing its sublimity, without exciting any idea of beauty, till that of the sublime is lost ; when the two powers being exactly balanced, no effect whatever is produced. Then, if instead of adding more beauty, we take away what was calculated to produce sublime ideas, we shall, by degrees, obtain the ideas of beauty.

This conclusion is in some degree acknowledged by the author, but by no means to its full extent ; though it appears so clear a deduction from his theory, that it must stand or fall with it ; and this argument alone, is sufficient to prove some considerable defect or oversight in his system. The introduction is very properly occupied by proofs, that taste is not mere whim, but a natural and rational preference ; and in endeavouring to shew that it principally depends on a cultivated judgment.

“ There is so continual a call for the exercise of the reasoning faculty, and it is so much strengthened by perpetual contention, that  
certain

certain maxims of right and wrong, seem to be settled among the most ignorant. If taste has not been so happily cultivated, it was not that the subject was barren, but that the labourers were few and negligent ; for to say the truth, there are not the same interesting motives, to impel us to fix the one, which urge us to ascertain the other ; yet still there is enough to prove the existence of fixed principles of taste, as well as of justice. All men are agreed in calling vinegar sour, honey sweet, and aloes bitter ; and they concur in calling sweetness pleasant, and sourness and bitterness unpleasant : a sour temper, bitter curses, a bitter fate, are terms well and strongly understood by all. Custom, and some other causes, have made many deviations from the natural pleasures and pains which belong to these several tastes ; but then the power of distinguishing between the natural, and the acquired relish, remains to the very last ; so that when it is said, taste cannot be disputed, it can only mean, that no one can strictly answer, what pleasure or pain some particular man may find from the taste of some particular thing. I believe that nothing beautiful was ever shewn to an hundred people, that they did not all immediately agree that it was beautiful ; though  
some

some might have thought that it fell short of their expectation, or that other things were still finer. No man thinks a goose to be more beautiful than a swan, or that a Friesland hen excels a peacock.

“ As in the works of art, the pleasure of resemblance is that which principally flatters the imagination, all men are nearly equal in this point, as far as their knowledge of the things represented or compared extends ; and it is from this difference of knowledge, that what we commonly, but with no great exactness, call a difference of taste, proceeds. A man sees some ordinary piece of statuary, he is immediately struck and pleased, because he sees something of a human figure, and occupied with the likeness does not attend to its defects ; afterwards, accustomed to more artificial works of the same nature, he looks with contempt on what he admired at first. Here, then, his knowledge is improved, his taste is not altered ; and perhaps he may stop here, and the masterpiece of a great hand may please him no more than a middling performance ; and this not for want of a better or higher relish, but because all men do not observe with sufficient accuracy on the human figure, to enable them to judge properly

properly of an imitation of it." We now proceed to the body of the work.

"The passions," says Burke, "which belong to self-preservation, turn on pain and danger; they are simply painful, when their causes immediately affect us; they are delightful, when we have an idea of pain and danger, without being actually in such circumstances; this delight I have not called pleasure, because it turns on pain, and because it is different enough from any idea of positive pleasure. Whatever excites this delight, I call sublime.

"The second head to which the passions are referred, with relation to their final cause, is society. There are two sorts of societies; the first is the society of sex; the passion which belongs to this, is called love, and it contains a mixture of lust; its object is the beauty of women. The other, is the great society with men, and all other animals; the passion subservient to this, is likewise called love; but it has no mixture of lust, and its object is beauty; which name I shall apply to all such qualities in things as induce in us a sense of affection and tenderness, or some other passion the most nearly resembling these. The passion of love has its rise in positive pleasure; it is like all things  
which



which grow out of pleasure, capable of being mixed with a mode of uneasiness; that is, when an idea of its object is excited in the mind, with an idea, at the same time, of its being irretrievably lost. This mixed sense of pleasure, I have not called pain; because it turns upon actual pleasure, and because it is, both in its cause, and most of its effects, of a nature altogether different.

“ The passion caused by the great and sublime in nature, when those causes operate most powerfully, is astonishment; and astonishment is that state of the soul, in which all its motions are suspended, with some degree of horror. In this case, the mind is so entirely filled with its object, that it cannot entertain any other; nor, by consequence, reason on that object which employs it. Hence arises the great power of the sublime, that far from being produced by them, it anticipates our reasonings, and hurries us on by an irresistible force; astonishment, as I have said, is the effect of the sublime in its highest degree; the inferior effects are admiration, reverence, and respect.

“ No passion so effectually robs the mind of all its powers of acting and reasoning, as fear; for fear being an apprehension of pain,  
or

or death, it operates in a manner that resembles absolute pain. Whatever, therefore, is terrible, is sublime too; and, indeed, terror is in all cases, either more openly or latently, the ruling principles of the sublime. Several languages bear testimony to the affinity of these ideas; *Θαμβος* is in Greek either fear or wonder; *αἶδο* to reverence or to fear; *vercor* is in Latin, what *αἰδεω* is in Greek; the word *stupeo*, strongly expresses the effect either of fear or astonishment; and *attonitus*, equally marks the alliance of these ideas: and in French *étonnement*, and in English *astonishment*, clearly point out the kindred emotions which attend fear and wonder.

“ Power, derives all its sublimity from the terror with which it is accompanied; as will appear evidently, from its effects in the very few cases in which it may be possible to strip a considerable degree of strength, of its ability to hurt; when you do this, you spoil it of every thing sublime, and it immediately becomes contemptible. An ox is a creature of vast strength, but he is an innocent creature, extremely serviceable, and not at all dangerous; for which reason, the idea of an ox is by no means grand. A bull is strong too, but his  
strength

strength is of another kind, often very destructive, seldom, at least among us, of any use in our business ; the idea of a bull is therefore great, and it has frequently a place in sublime descriptions and elevated comparisons.

“ We have continually about us, animals of a strength that is considerable, but not pernicious, among these, we never look for the sublime ; it comes upon us in the gloomy forest, and in the howling wilderness, in the form of the lion, the tyger, the panther, or the rhinoceros. Fear excites the nerves to strong action, and strains their fibres to the utmost ; hence circumstances not terrible, may be sublime, because they act in the same manner ; the incessant repetitions of rays of light acting exactly in the same mode, from an extended surface, stimulates in a high degree the optic nerve, and produces an emotion, properly called sublime ; and the same effect is produced by a succession of uniform objects ; but if the objects are not uniform, a difference takes place in the mode of action, which rests the organ, and prevents the full effects of the sublime. Darkness is also sublime, the same effects being produced on the nerve by the efforts made to see.”

Having

Having thus traced the causes of the sublime, Burke proceeds to investigate those of beauty ; but before supporting his own opinion on this subject, he thinks it necessary to refute some common notions on this point.

“ Proportion has been deemed one of the constituents of beauty ; but if it be so, it must derive that power either from some natural properties inherent in certain measures, from the operation of custom, or from an appearance of fitness. If it be inherent, the same proportions ought to be found in all beautiful objects ; and wherever such proportions occur, the object should be beautiful ; neither of these are true. The rose is a large flower, yet it grows upon a small shrub ; the flower of the apple is small, and grows upon a large tree ; the swan, confessedly a beautiful bird, has a neck longer than the rest of the body, and but a very short tail ; the neck of the peacock is comparatively short, while the tail is longer than that and the body taken together. In the human species, proportions have been assigned to the different parts, which are indeed to be found in many beautiful objects ; but they are also to be met with in many ugly ones, as any who will take the pains

to



to try, will find ; nay, they are perhaps least perfect, in some of the most beautiful.

“ Custom is by no means a source of pleasure ; for as it takes off the painful effect of many things, it reduces the pleasurable effect of others in the same manner, and brings both to a sort of mediocrity or indifference ; neither can fitness be properly reckoned among the causes of beauty, for on that principle, the wedge-like snout of a swine with its tough cartilage at the end, the little sunk eyes, and the whole make of the head, so well adapted to its office of digging and routing, would be extremely beautiful ; the great bag hanging to the neck of the pelican, a thing highly useful to this animal, would be likewise beautiful in our eyes. The effect of proportion and fitness, at least so far as they proceed from a mere consideration of the work itself, is to produce approbation, the acquiescence of the understanding, but not love, nor any passion of that species.”

Burke has rather assumed that beauty is that which produces love, as a definition, than introduced it as a theorem which he had to support. The appearance of beauty, he tells us, as effectually causes some degree of love in

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us, as the application of ice or fire, produces the ideas of heat or cold ; this surely required to be proved ; we will, however, pass on with him to the consideration of the circumstances which produce beauty, or which is the same thing, excite love. “ In most languages, the objects of love are spoken of under diminutive epithets ; in Greek, the *ωω* and other diminutives, are almost always the terms of affection and tenderness ; and the Romans naturally slid into the lessening termination on the same occasions. Anciently, in the English language, the diminishing *ling* was added to the names of persons or things that were the objects of love ; some we retain still, as *darling* or little dear, and a few others : a great beautiful thing, is a manner of expression scarcely ever used ; but that of a great ugly thing is very common.

“ Smoothness is a property so essential to beauty, that the author cannot recollect any beautiful object which is not smooth ; smooth leaves, smooth streams, smooth skins, and in ornamental furniture, polished surfaces, all owe a considerable part of their beauty to this quality. Gradual variation too, will be almost always found in the most beautiful objects ; such as the forms of the finest birds ; but it is  
more

more strikingly shewn about the neck and breasts, that is, in the most beautiful parts, of a beautiful woman. An appearance of delicacy, and even of fragility, is almost essential to beauty ; it is not the oak, the ash, or the elm, that we consider as beautiful ; they are awful and majestic ; it is the myrtle, the jasmine, and the vine, and the tender flowers, that are looked upon as vegetable beauties. Among animals, the greyhound is more beautiful than the mastiff ; the Barb or the Arabian than the war horse. The beauty of women is considerably owing to their weakness or delicacy ; and of this they are so conscious, that they learn to lisp, to totter in their walk, and to counterfeit weakness, and even sickness : I would not here, be understood to say, that weakness betraying very bad health, is conducive to beauty ; because this alters the other conditions of beauty, the bright colour, the *lumen purpureum juventæ* is gone, and the fine variation is lost in wrinkles.

“ If then, we compare the beautiful with the sublime, we shall find a remarkable contrast : sublime objects are vast in their dimensions ; beautiful ones comparatively small. Beauty should be smooth and polished ; the great, rugged and negligent : beauty should  
shun

shun the right line, yet deviate from it insensibly ; the great, in many cases, loves the right line, and when it deviates, it often makes a strong deviation. Beauty should not be obscure, the great ought to be dark and gloomy ; beauty should be light and delicate, the great ought to be solid, and even massive ; they are, indeed, ideas of a very different nature, the one being founded on pain, the other on pleasure."

I believe it will be sufficient merely to mention that part of the work, in which the author endeavours to explain mechanically, the mode of action by which certain objects excite ideas of beauty and sublimity.

" Fear, like pain, contracts the nerves, and excites in them, a violent emotion, as is shewn by the attitude and change of features, of men suffering the one or the other ; love, as is shewn by the same circumstances, relaxes them, and a degree of relaxation below the natural tone, seems to be the cause of all positive pleasure. Who is a stranger to that manner of expression, so common in all climes and countries, of being softened, relaxed, enervated, dissolved, melted away, by pleasure ? The universal voice of mankind, faithful to their feelings, concurs in affirming this uniform  
and



“ It is in a sort of artificial infinity, that we are to look for the cause why a rotund has such a noble effect, for in this, whether it be a building or plantation you can no where fix a boundary : turn which way you will, the same object seems to continue, and the imagination has no rest. But the parts must be uniform, as well as circularly disposed, to give this figure its full force, because any difference, whether it be in the disposition, or in the figure, or even in the colour of the parts, is highly prejudicial to the idea of infinity, which every change must check, and interrupt ; at every alteration commencing a new series. On the same principle of succession, and uniformity, the grand appearance of the ancient temples, which were generally oblong forms, with a range of uniform pillars on every side, will be easily accounted for. From the same cause also may be derived the grand effect of the aisles in many of our old cathedrals. The form of a cross, used in some churches, seems not to me so eligible as the parallelogram of the ancients ; at least I imagine it not so proper for the outside ; for supposing the arms of the cross every

way equal ; if you stand in a direction parallel to any of the side walls or colonnades, instead of a deception that makes the building more extended than it really is, you are cut off from a considerable part (two-thirds) of its actual length ; and to prevent all possibility of progression, the arms of the cross, taking a new direction, make a right angle with the beam, and thereby wholly turn the imagination from the repetition of the former idea. Or suppose the spectator placed where he might take a direct view of such a building, what will be the consequence ? the necessary consequence will be, that a good part of the basis of each angle formed by the intersection of the arms of the cross must be inevitably lost ; the whole of course assume a broken unconnected figure ; the lights must be unequal, here strong, there weak, without that noble gradation which the perspective always effects on parts disposed uninterruptedly in a right line ; some or all of these objections will be against every figure of a cross, in whatever view you take it ; I have exemplified them in the Greek cross, in which these faults appear most strongly, but they appear in some degree in all sorts of crosses ; indeed there is nothing more prejudicial to the grandeur of buildings, than to abound  
in

in angles—a fault obvious in many, and owing to an inordinate thirst for variety, which wherever it prevails is sure to leave very little true taste.

“ Too great length in building destroys the purposes of greatness, it was intended to promote ; the perspective will lessen in height as it gains in length, and will bring it at last to a point, turning the whole figure into a sort of triangle, the poorest in its effects of almost any figure that can be presented to the eye. I have ever observed, that colonnades, and avenues of trees, of a moderate length, were without comparison far grander than when they were suffered to run to immense distances.”

It is remarkable that in the application of his principles to architecture, Burke accounts for the sublimity of buildings, but not for their beauty : this deficiency has been supplied by Uvedale Price, in a manner which I think Burke himself would readily acknowledge.

“ No building is more universally admired for its beauty, says Mr. Price, than the temple of the Sybil at Tivoli, and none agrees more closely with the qualities assigned by Mr. Burke to the beautiful. It is circular, surrounded with columns detached from the body of the build-

ing, it is light and airy, of a delicate frame, in a great measure free from angles, and comparatively small. As a further proof of its beauty, it may be remarked that Claude has repeated it much more frequently in his landscapes, than any other building."

\* Having now given I believe a fair and correct statement of Mr. Burke's theory, and the leading arguments in its support, I shall endeavour to point out a few objections that may be or have been made to it; what I have already said is I think sufficient to shew, that however the sublime and beautiful may differ, they are not such direct opposites as Mr. Burke represents them, for we have all probably felt, that the sublime and beautiful may be united in a very high degree, without producing insipidity.

As for the author's graduated scale of the sublime, from respect to astonishment, it cannot perhaps be better illustrated than by applying it to his own character.

He was certainly a very respectable man, and revered by all who knew him intimately.

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\* The following observations on Mr. Burke's theory are principally copied from Knight's Analysis of Taste.



ly. At one period of his life, too, when he became the disinterested patron of remote and injured nations, who had none to help them, his character was truly sublime : but unless upon those whom he so ably and eloquently arraigned, I do not believe that it impressed any *awe*.

If during this period he had suddenly appeared among the managers in Westminster Hall without his wig and coat ; or had walked up St. James's Street without his breeches, it would have occasioned great and universal astonishment ; and if he had at the same time carried a loaded blunderbuss in his hands, the astonishment would have been mixed with no small portion of terror : but I do not believe that the united effects of these two powerful passions would have produced any sentiment or sensation approaching sublime, even in the breasts of those who had the strongest sense of self-preservation, and the quickest sensibility of danger.

That terror is not the source of the sublime, may be deduced from the following considerations. As far as feeling or sentiment is concerned, and it is of feeling and sentiment only that we are speaking, that alone is terrible which impresses some degree of fear. I may

know an object to be terrible ; that is, I may know it to possess the power of hurting or destroying ; but this is knowledge, and not feeling or sentiment ; and the object of that knowledge is power, and not terror. That alone is actually terrible to me which actually impresses me with fear ; for though I may know it to be dangerous when I am beyond its reach, I cannot feel that sentiment which danger inspires till I either am or imagine myself to be within it ; and as all agree that the effect of the sublime upon the mind is a sentiment of feeling, and not a result of science, it follows that I cannot feel the sublime till I experience a passion, which Mr. Burke himself acknowledges would totally destroy it. I neither feel the character of Nero or Caligula to be sublime, now I am out of their power, nor should I have felt it so had I been in ever so much personal danger from them. While the character of Cato, who had comparatively neither the power or the inclination to do mischief, is truly sublime.

There is no image in poetry wrought up with more true sublimity and grandeur, than the following of Virgil ; but that it should be quoted as an instance of terror being the cause of the sublime, is to me most unaccountable.

*Ipse pater,*

Ipse pater, media nimborum in nocte, corusca  
 Fulmina molitur dextra : quo maxima motu  
 Terra tremit, fugere fera : et mortalia corda  
 Per gentes humilis stravit pavor.————

If sublimity is here in any degree the result of terror, the poet must have very ill understood the effect of his own imagery : for he expressly tells us, that the effect of this dreadful explosion of thunder and lightning, upon those who felt it was *humble fear* ; and surely he could not, by *humble fear*, mean any sublime sentiment ; the description, indeed, impresses us with such sentiments, because we sympathize with the vast, and energetic power displayed, and feel no terror whatever ; but those who witnessed the reality, and did feel terror, felt the effects of it as the poet has stated them, to be humble, and depressing, instead of elevating and expansive.

Whether vast objects be acknowledged sublime or not, I apprehend Burke's mode of accounting for it cannot possibly be adopted. He supposed it to arise from the number of rays which they emit, crowding into the eye in quick succession, and producing a degree of tension in the membrane of the retina,—and this “approaching nearly to the

“ nature of what causes pain, must,” in his own words, “ produce an idea of the sublime ;” but the slightest reflection might have convinced him, that the sheet of paper on which he was writing, being seen thus close to the eye, reflected a greater and more forcible mass of light ; and consequently produced more irritation and tension than the Peak of Teneriffe, or Mount St. Elias would, if seen at the distance of a few miles.

If we turn to Burke’s mode of accounting for the beautiful, we shall, I believe, find it nearly equally open to objections. It may perhaps be allowed, that the effect of beauty is to excite love, though even then some modifications, I think, might be insisted on ; but love may certainly subsist without beauty, as I believe we should all think it strange to be told, that we could not possibly love a friend, or even a dog, because he was not handsome. It may indeed be contended, that we love them for qualities analogous to beauty, “ for the soft green of the soul ;” but supposing it to be the fact, (which will, I believe, not be found to be the case) that we love our friends in proportion as they possess this easiness of temper, still the love of parents to idiot children, is an anomaly not to be



be accounted for on this system. From what other source this may arise is nothing to me, all I contend for is, that it does not arise from any beauty, either of mind or body, and that therefore to prove any quality, weakness for instance, to be a source of love, (which it certainly may sometimes be) is not to prove it at the same time a source of beauty.

That weakness is a source of beauty seems so strange a position, that one hardly knows how to set about to controvert it. If a greyhound is weaker than a mastiff, it is both larger and stronger than a pug-dog; and an horse is universally esteemed more beautiful than an ass, and a swan than a goose. Here then the advantage is decidedly in favor of the largest and strongest animal; and if diminutives are in all languages terms of endearment, it is because they are the terms naturally applied by parents to their children; but if we join the diminutive to a term which precludes all such affection, it immediately converts it into a term of contempt:—bantling, fondling, darling, are terms of endearment; *witling*, *changeling*, *lordling*, of scorn. In French, *mon petit enfant*, is an expression of tenderness; *mon petit monsieur*, of the most pointed contempt.

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With respect to smoothness and variation which are the other chief sources of beauty, we may observe, that the effect of ornament is to change smooth surfaces into rough ones; a frieze quite plain is quite smooth, ornament it and it is so no longer. A Corinthian capital is generally esteemed beautiful; and yet it abounds with sudden and angular deviations, and these which in theory ought to injure at least, if not destroy the character of beauty, are evidently introduced to heighten, and do, I believe, in the general estimation of mankind, really heighten it; for a capital of mere waving lines would, I fancy, have few admirers or lovers. Indeed it is always considered as a merit in mere ornaments that they are sharp, that is, that the variations of their surface are abrupt and angular.

The appearances of reason and philosophy which Alison's Essays contain, and the reputation they have acquired amongst men of talents and reflection, will induce me to pay more attention to them than I should have done from my own opinion of their merits. He acknowledges with Burke the distinction of the sublime from the beautiful, and adopts from him in general the sources whence they proceed, but rejects what that author calls "the efficient causes,"

causes," and endeavours in another way to explain why these circumstances excite in the mind the emotions of taste. "Whenever," says he, "the emotions of sublimity or beauty are felt, that exercise of the imagination is produced which consists in the indulgence of a train of thought. When this exercise is prevented, these emotions are unfelt or unperceived; and whatsoever tends to increase this exercise of mind, tends in the same proportion to increase these emotions. If these positions are just, it seems reasonable to conclude, that the effect produced upon the mind by objects of sublimity and beauty, consists in the production of this exercise of the imagination.

"This conclusion is however in itself too general to be considered as a sufficient account of the nature of that operation of the mind, which takes place in the case of such emotions. There are many trains of ideas of which we are conscious which are unattended with any kind of pleasure. If therefore some train of thought, or some exercise of the imagination, is necessary for the production of the emotions of taste, it is obvious that this is not every train of thought of which we are capable. To ascertain

certain therefore with any precision, either the nature, or causes of these emotions, it is previously necessary to investigate the nature of those trains of thought, that are produced by objects of sublimity or beauty, and their difference from those ordinary trains, which are unaccompanied by such pleasure. This difference appears to consist in two things; 1st. the nature of the ideas or conceptions which compose such trains; and 2dly. the nature or law of their succession.

“ Those trains of thought which are suggested by objects of sublimity or beauty, are in all cases composed of ideas capable of exciting some affection or emotion; so that not only the whole succession is accompanied with that peculiar emotion, which we call the emotion of beauty or sublimity, but every individual idea of such a succession, is in itself productive of some simple emotion or other. Thus the ideas excited by the scenery of spring, are ideas productive of emotions of cheerfulness, of gladness, and of tenderness; the images suggested by the prospect of ruins, are images belonging to pity, melancholy, and to admiration. The ideas awakened by the view of the Ocean in a storm,



storm, are ideas of power, of majesty, and of terror. These ideas may be called ideas of emotion.

“ The first circumstance, then, which distinguishes those trains of thought, which are produced by objects either of sublimity or beauty, is that the ideas or conceptions of which they are composed, are ideas of emotion.

“ In those trains which are suggested by objects of sublimity or beauty, however slight the connection between individual thoughts may be, it will be found that there is always some general principle of connection, which pervades the whole, and gives them some certain and definite character. They are either gay, or pathetic, or melancholy, or solemn, or awful; according to the nature of the emotion that is first excited. These trains of thought are therefore distinguished, 2dly. by their having some general principle of connection, which subsists through the whole extent of the train. Thus it appears we shall have to establish three positions: 1st. that the emotions of taste are accompanied with certain trains of ideas; 2dly. that these ideas are all ideas of emotion; and 3dly. that they have some common bond of union.

“ 1stly.

“ Istly. When any object either of sublimity or beauty is presented to the mind, every man is conscious of a train of thought being awakened in his imagination, analogous to the character or expression of the original object. The simple perception of the objects, we frequently find is insufficient to excite these emotions, unless it is accompanied with this operation of the mind; unless, according to the common expression, our imagination is seized, and our fancy busied in the pursuit, of those trains of thought which are allied to this character or expression.

“ Thus, when we feel either the beauty or sublimity of natural scenery, the gay lustre of a morning in spring, or the mild radiance of a summer's evening, the savage majesty of a wintry storm, or the wild magnificence of a tempestuous ocean, we are conscious of a variety of images in our mind, very different from those which the objects themselves can present to the eye. Trains of pleasing, or of solemn thought, arise spontaneously within our minds; our hearts swell with emotions, of which the objects before us seem to afford us no adequate cause; and we are never so much satiated with  
delight,

delight, as when, in recalling our attention, we are unable to trace either the progress or connection of those thoughts, which have passed with so much rapidity.

“ There are some familiar considerations, which seem very strongly to shew the connection between this exercise of the imagination, and the existence of the emotions of sublimity or beauty.

“ To a man in pain or grief, whose mind by those means is attentive only to one object or consideration, the same scene, or the same form, will produce no feeling of admiration, which, at other times, when his imagination was at liberty, would have produced it in its fullest perfection. There is no man who has not felt the beauty of sunset; yet every one can remember instances, when this most striking scene had no effect at all on his imagination. A beautiful poem may be read sometimes with perfect indifference; while, in other moments, the first lines we meet with take possession of our imagination, and awaken in us such innumerable trains of imagery, as almost leave behind the fancy of the poet. The same thing is observable in criticism; when we  
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sit down to appreciate the value of a poem, or of a painting, and attend minutely to the language or composition of the one, or to the colouring or design of the other, we feel no longer the delight they at first produced ; our imagination in this employment is restrained, and instead of yielding to its suggestions, we studiously endeavour to resist them, by fixing our attention upon minute and partial circumstances in the composition."

Perhaps I shall be better understood, if I venture to make a few remarks on this first position, before proceeding to the second, than if I reserve them all to the end. It is almost as difficult to prove a circumstance of this sort, which depends so much on individual feeling, as to prove a colour to be blue or yellow, to one who chuses to deny it : and Alison certainly has not effected his purpose ; for, a man in pain or grief, or whose mind is in any way strongly occupied, is insensible to pleasing sensations, as well as to the emotions of taste.

In endeavouring to ascertain the truth or falsity of such a position, it is natural to begin by examining, as closely as we are able, what passes in our own minds on these occasions : to this I have attended, and as far as my own experience



rience goes, I feel myself justified in contradicting Alison's theory. I do not mean to deny the existence of all association in the production of the emotions of taste, nor to assert that such trains of ideas as he describes, are unaccompanied with pleasure; all I contend for, is, that the pleasures of taste do not depend on such trains; because its emotions may, and often do, subsist without them. But, though, if we deny the existence of such trains of ideas, we cannot consistently reason on the nature of the ideas themselves, or on that of their connection; yet, we may still allow, that each part of a composition ought to be calculated to excite emotion, and that of one uniform character; which is the subject of the two following propositions, to which I now proceed.

“ 2dly, Various observations may be adduced, to prove that the trains of ideas exciting the emotions of taste, must consist of ideas of emotion ; some affection must be excited by the presence of an object, before the more complete emotion is felt, and if no such affection is excited, no emotion of sublimity or beauty is produced.

“ There is, undoubtedly, a very great  
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difference between the emotion of taste, and any simple emotion ; as of cheerfulness, tenderness, melancholy, solemnity, elevation, terror, &c. ; as such emotions are frequently felt without any sentiment of sublimity or beauty ; but there is no case where the emotions of taste are felt, without the previous production of some such simple emotion.

“ In the man of business, who has passed his life in studying the means of accumulating wealth, the prospect of any beautiful scene in nature, would induce no other idea than that of its value ; in the philosopher, whose years have been employed in the investigation of causes, it would lead only to speculations upon the sources of the beauty that was ascribed to it ; in neither, would it excite an emotion which might serve as the foundation of this exercise of the imagination.

“ When a man of taste settles in a romantic country, the aspect in which he sees its beauties, is that in which they are calculated to produce emotion. The streams are known to him by their gentleness, or their majesty ; the woods by their solemnity ; the rocks by their awfulness or terror : in a very short time, he is  
forced

forced to consider them in very different lights ; they serve as distinctions of different properties, boundaries, and as landmarks ; it is with respect to these, that he will usually hear them spoken of, and in this light he must often think and speak of them himself ; and unless when particular incidents have awakened that tone and temper of thought with which their expressions agree, they can no longer excite in him the emotions of taste. In the same manner, the great and opulent become indifferent to the articles of elegance or magnificence, with which they are surrounded ; they become associated with various ideas of cost or use, and their beauty is no longer noticed.

“ The pleasure which accompanies the emotions of taste, may be considered, not as a simple, but as a complex pleasure ; and as arising, not from any separate and peculiar sense, but from the union of the pleasure of simple emotion, with that which is annexed, by the constitution of the human mind, to the exercise of the imagination.

“ 3dly, That these ideas must have some common bond of connection, that is, that they must possess unity of character, may be clearly

proved. There is no man of common taste, who has not often lamented that confusion of expression, which so frequently takes place, even in the beautiful scenes of real nature; and which prevents him from indulging to the full, the peculiar emotion which the scene itself is fitted to inspire. It is in the power which the art of gardening possesses, in common with the other fine arts, of withdrawing from its imitations, whatever is inconsistent with their expression, and of adding, whatever may contribute to strengthen or to extend their effect; that the great superiority which it possesses over the originals from which it is copied consists.

“ What gardening does in some degree, landscape painting can perform much more completely; and poetry has a similar advantage over painting; and this unity of character, in the emotions intended to be produced, is at least as essential in this, as any of the three which have been so much insisted on.”

Having thus endeavoured to explain in what manner beauty acts upon the mind, Alison proceeds to shew how the emotions of taste are excited by the objects of the material world.



world. “ Matter itself, may produce pleasing sensations, but not emotions ; the smell of a rose, the colour of scarlet, the taste of a pineapple, when spoken of merely as qualities, and abstracted from the objects in which they are found, are said to produce agreeable sensations, but not agreeable emotions. In the same manner, the smell of assafœtida, or the taste of aloes, when spoken of as abstract qualities, are uniformly said to produce unpleasing sensations, but not unpleasing emotions ; but though they are of themselves incapable of producing emotion, or the exercise of any affection, yet it is obvious that they may produce this effect, from their association with the qualities or affections of the mind. Thus in sounds ; thunder, the murmuring of an earthquake, the report of artillery, the fall of a cataract, are sublime, because they are connected with ideas of power and danger ; most of them may be imitated, by means not connected with such ideas, and the sounds are then no longer sublime. The rumbling of a cart, is sometimes mistaken for distant thunder, yet nobody thinks it sublime ; the noise of the rattle snake is very little different from that of a child’s play-thing ; the growl

of a tyger resembles the purring of a cat ; yet the former are sublime, the latter insignificant. In the same manner, sounds are beautiful by association ; even the song of the nightingale, so wonderfully charming in the twilight, is altogether disregarded in the day.

“ Every work of design,” observes Alison, “ may be considered in one or other of the following lights ; either in relation to the art or design which produced it ; to the nature of its construction, for the purpose or end intended ; or to the nature of the end, which it is designed to serve ; and its beauty accordingly depends, either upon the excellence or wisdom of this design ; upon the fitness or propriety of this construction ; or upon the utility of this end. The considerations of design, of fitness, and of utility, therefore, may be considered as the three great sources of the relative beauty of forms. That the quality of design is, in many cases, productive of the emotion of beauty, is too obvious to require illustration ; and the material quality most expressive to us of design, is uniformity or regularity : this, therefore, is usually pleasing ; but whenever we meet with it in nature, and know it to be the effect  
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of chance, it may be curious, but not beautiful.

“ In the infancy of society, when art was first cultivated, and the attention of men first directed to the works of design, it is natural to imagine, that such forms would be employed on those arts, which were intended to please, as were most strongly expressive of design or skill; this would arise from their ignorance of those more interesting qualities, which such productions might express; and from the peculiar value which design, or art itself, in such periods possessed. What the artist would value himself upon, would be the production of a work of skill; what the spectator would admire, would be the invention or ingenuity of the workman, who was capable of imagining and executing such a work; what the workman therefore would study, would be to give his work as full and complete an expression of skill and design as possible; he could, however, do this in no way so surely, as by the production of uniformity; by making choice of an attitude, in which both sides of the body were perfectly similar, and the folds of the drapery correspondent. And such are the earliest efforts of art in all nations. Afterwards,

variety of form and attitude comes to be more strongly indicative of design and skill, than this perfect uniformity, which consequently ceases to be any longer the object of art."

In my observations on the different authors I have to notice, it is certainly my wish to state their best arguments, and not to waste your time and my own, by dwelling on those parts, which may be abandoned without materially detracting from the support of the theory. Three circumstances may, however, concur to make these writers appear in a less favourable point of view in my remarks, than in their own works; and in none of them, perhaps, would they apply more strongly than to Alison. I had extracted a great deal of the application of his theory to the objects of sense, but they made so poor a figure, that I afterwards determined to omit them. In the first place, many of his best passages would support many other theories as well as his own; secondly, where the system is bad, it must often happen that some of the most objectionable parts, are those which expose it most strongly; and thirdly, from his total ignorance of even the first principles of architecture, the application of his theory



theory to that subject, is among the worst parts of his book.

I think Alison has been guilty of great neglect in omitting, not only to define his words, but even to give them distinct and consistent meanings. Stronger objections may be made to some other words, than to *emotion*, which is the first of which I have to complain; it is not distinguished with clearness, from *passion*, nor I think, even from the qualities of the mind.

Of smells and tastes, as productive of emotions, he says nothing; of sounds, he finds such sublime as are connected with power or danger; divest them of these, they cease to be sublime. But if this be the case, surely it is very erroneous to call the sound sublime; the power or danger must be sublime, not the sound, which is nothing but as it announces the presence of one or the other. He cites the forms of military weapons as sublime, but surely here the sublimity has nothing to do with the form; no one ever felt such an emotion from a pasteboard sword: if any thing relating to them is sublime, it is the destruction for which we know them to be calculated. Rocks, which are adduced as another example, may  
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be sublime, but not, on this principle, their forms—indeed, no particular form is assignable to rocks.

“Magnitude,” according to Alison, “is expressive of vastness;” this is a wonderful discovery; yet a careful definition of the terms employed, would reduce many of his propositions to the same nothingness. In all, for instance, which he offers relating to the beauty of forms, the misuse of the words *delicacy* and *tenderness*, forms his main support: if the first did not sometimes mean beauty, sometimes weakness, and sometimes both united; if the latter were not sometimes put for that which is capable of exciting love, sometimes for weakness, and sometimes for the union of this with beauty, the whole chain of argument would fall to the ground.

Besides this misuse of terms, it may fairly be objected to him, that he assumes what hardly any one who had ever attended to the subject would grant. It is amusing to notice the difference between him and Burke, in a case where both authors have been guilty of this fault: Burke represents all positive pleasure, as relaxation below the natural tone; we are filled with a pleasing languor, and indisposed to exertion:

ertion : Alison attributes the same character to pain, and assigns to pleasure, those diametrically opposite ; and both appeal with equal confidence to common observation.

The idle fancy, of winding forms being expressive of volition, is another among the numerous instances of this fault ; a river, he observes, winds, a vine wreathes itself about the elm ; but a star shoots, a stone falls, not in curved, but in straight lines ; we use the active voice, where the power is hidden, or at least not considered.

The young shoots of most trees are straight, the larger branches of many, crooked and winding ; Alison asserts exactly the reverse, and endeavours to prove it a necessary condition of their beauty. Furniture he considers as beautiful, in proportion as it is slight and unsteady ; and instances the tripod, “ in the best periods of Roman taste,” as an excellent instance of both perfections : surely it is not necessary to examine and confute such doctrine.

In architecture, he merits, if possible, still less praise ; he says that walls of the same age, are very nearly of the same thickness ; which if he had not been blinded by affection for his theory, he must have seen to be totally false ;  
and

and if true, it would not support his reasons for the beauty of buildings, as it would affect their absolute, and not their relative dimensions. That an order has nothing to do with the support of a roof, and that their entablatures are in the ratio of the strength of the column, are both false. In considering the interior of rooms, he arrives, by means of some strange assertions, at the strange conclusion, that the only defect an apartment can possibly have, arises from the apparent insufficiency of the walls to support the roof.

Sir Joshua Reynolds thought that beauty was always to be looked for in the central form of each species of animal. Strictly speaking, the arguments used by him in support of his opinion, will apply to architecture, as well as to painting and sculpture ; but it is not to be imagined, that he would have maintained that edifice to be the most beautiful, which possesses the average form, as the great proportion of common buildings would make that average deviate very little from shapes not all pretending to beauty ; I shall not therefore dwell on such an application of his principle ; and yet, though not perhaps exactly included in my object, I am unwilling to pass over the opinion  
of



of such a man without further notice. "No man," says he, "can judge of the beauty or deformity of an animal, who has seen only one of the species. A man born blind, if he were suddenly to receive his sight, and to open his eyes on two women the most beautiful and the most deformed of the species, could not determine to which he should give the preference. To distinguish beauty, it is necessary to have seen many of the species, which will enable him to separate the general form, which nature always approaches, and which she seems always to intend to produce, from any accidental variations.

"The general or central form, is not only the mean form of nature's productions, but is also more common than any one other given form: and as we are more accustomed to beauty than to deformity, we may conclude that to be the reason why we approve and admire it.

"He who would attempt to go farther, and assign a reason why one species is more beautiful than another, must first prove that it is so; some may prefer a swan, and some a dove, and each may be able to assign reasons for his preference, without in fact any real superiority on either side: it is custom alone determines

our preference of the colour of Europeans to the Ethiopians ; a negro beauty would be black, with thick lips, flat nose, and woolly hair. The black and white nations must, in respect of beauty, be considered as different species."

It will be seen, that all this is rather illustration, than argument : it may however be worth while to examine how far it is founded on truth. If a man born blind were, on receiving his sight, to see a woman, we must acknowledge he could not tell whether she was beautiful or not, because by beauty we mean in some degree a comparative excellence ; when we praise a woman for her beauty, we mean that she is more beautiful than women usually are ; this the blind man certainly could not tell, and if two women were placed before him, his preference might not be exactly the same as that of persons possessed of sight, as a number of associations are intimately, and perhaps inseparably, connected in our ideas of beauty, without our consciousness : but I think I shall have most men on my side, if I maintain that he would instantly prefer beauty to deformity.

We may perhaps reasonably doubt, whether the central form is more common than any other ;

other ; the instance adduced by Sir Joshua of a straight ridge to the nose, is in England certainly not often met with ; however the commonness of the central form does not seem necessary to the support of the theory.

If Sir Joshua, in attempting to prove all species equally beautiful, had taken two, of which one in the common language of mankind is called beautiful, and the other ugly ; if instead of the swan and the dove, he had taken the swan and the goose, I think he would have found himself obliged to alter his position ; and yet if beauty result from what we are accustomed to, the goose ought to have the preference, for though the swan is a common bird, the goose is much more so. If it be said, that in birds so nearly allied only one central form ought to be looked for, I should ask if the form of a swan would be improved by approximating it to that of a goose ? and if a still wider range be taken, and a central form be to be sought for the whole feathered race, we shall have, what Sir Joshua denies, pre-eminent beauty in one species.

It seems to me perfectly clear, that if this doctrine of central forms be admitted, it must be extended farther than Sir Joshua's limits,  
and

and we must consider that species as the most beautiful, which approaches nearest to the central form of all species, or at least of all species which admit of comparison; and on this ground the swan will fall very far short, in the scale of beauty, of the rank it usually holds; and man, who would be compared with monkeys, if not with other quadrupeds, must be esteemed less beautiful than the ourang outang, or than animals of forms still farther removed from his own.

In compliance with the prejudice man naturally feels for his own species, this objection may be passed over, but still we must admit, that a central form and colour of all the different tribes would to a man of an enlarged mind, be the most beautiful; but as far as complexion goes, the contrary might be proved from the author's own writings, and the greater capacity for expression in a complexion comparatively fair, would alone determine the contrary; and till the other tribes of the human race have shewn themselves equal to the Europeans in *mind*, I think we are justified in preferring those forms, which till then must be considered as indicative of intellectual superiority.

This is all that Sir J. Reynolds' works contain



tain of theory, or of general principle, applicable to all the arts. In pursuance of my general plan, I shall now proceed to point out the few observations he makes relating to architecture: in this science he disclaims all authority, but praises Vanbrugh for the production of painter-like effect in his buildings, and for his composition and management of light and shade; and particularly for his care to unite his work well with the ground, and that it did not abruptly start out of it without preparation or expectation: he also commends him for the display of imagination exhibited in his works.

To his observations on winding and irregular streets, I am strongly inclined to accede, in spite of the almost universally received opinion to the contrary. He remarks that, "the forms and turnings of the streets of London and other old towns, are produced by accident, but they are not always the less pleasant to a walker or spectator on that account; on the contrary, if the city had been built on the regular plan of Sir Christopher Wren, the effect might have been, as we know it is in some new parts of the town, rather unpleasant; the uniformity might have produced weariness and a slight degree of disgust."

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The next division of my subject will lead me to an examination of the *picturesque*. The eloquence and authority of Burke having established smoothness, as a necessary constituent of beauty, it would not long escape observation, that many very pleasing objects were deficient in that quality; and as it was remarked that the scenes chosen by painters, (whose object is the selection of what is beautiful, or at least of what is pleasing) were generally of this character, it was agreed to give it the name of *picturesque*.

Gilpin was, I believe, the first who attempted to define this character, and to shew how it differed from beauty; to which, indeed, it is in his ideas almost the precise opposite. He acknowledges with Burke, that smoothness is a considerable source of beauty, generally speaking; but maintains that the reverse is the case, in *picturesque* representation, and that roughness forms the most essential points of difference between the *beautiful* and the *picturesque*.

The term roughness, is afterwards defined so as to include ruggedness; so that the idea of gradual variation, which is considered by Burke as essential to beauty, must be excluded from

from the picturesque ; smallness of dimension is also rejected.

The following extract may serve to shew to what an extent he carries this theory. “ You  
“ desire to have a beautiful object painted ;  
“ your horse, for instance, led out of the  
“ stable in all his pampered beauty. The art  
“ of painting is ready to accommodate you ;  
“ you have the beautiful form you admired in  
“ nature, exactly transferred to canvass : be  
“ then satisfied, the art of painting has given  
“ you what you wanted. It is no injury to the  
“ beauty of your Arabian, if the painter think  
“ he could have given the graces of his art  
“ more forcibly to your cart horse. But does  
“ it not depreciate his art, if he give up a  
“ beautiful form for one less beautiful, merely  
“ because he could have given it the graces of  
“ his art more forcibly ? Is the smart touch of  
“ a pencil the grand desideratum in painting ?  
“ Does he discover nothing in picturesque ob-  
“ jects, but qualities which admit of being  
“ rendered with spirit ?” In defending his ar-  
tist from this latter insinuation, Gilpin entirely overlooks the first question, which I am afraid must be answered in the affirmative ; yet he afterwards admits the horse, with a glossy coat,

to be a picturesque object, on the same principle that an unruffled lake is so; from the strong lights and shades which are caused by reflection.

In the latter part of the essay, a variety of solutions are offered to the question of, "Why this roughness is necessary in a picture, when it is not so in nature?" but they are all rejected. The case, he observes, is the same with the question of, "What is taste?" various answers to which have been given by different philosophers; but not one which will stand the test of a rigorous examination. "Thus in our enquiries into first principles, we go on without end, and without satisfaction; the human understanding is unequal to the search."

Uvedale Price is, however, the great hero of the picturesque, and to his works I shall now proceed; as any further remarks I could make upon Gilpin, would only anticipate his observations, or my own on his principles.

"Many objects," this author observes, "are pleasing in pictures, and even in reality, to connoisseurs, in which the common observer sees no merit; these are picturesque: and it will be found on examination, that while beauty pleases by smoothness, softness, symmetry,



try, and gradual variation; the picturesque depends on roughness, ruggedness, abruptness, and irregularity. A temple or palace of Grecian architecture, in its most intire state is beautiful; in ruin it is picturesque; observe the process by which time converts a beautiful object into a picturesque one. First, by means of weather stains, partial incrustations, mosses, &c.; it at the same time takes off from the uniformity of its surface, and of its colour; that is, gives it a degree of roughness and variety of tint. Next, the various accidents of weather loosen the stones themselves; they tumble in irregular masses, upon what was perhaps smooth turf or pavement; or nicely trimmed walks and shrubberies; now mixed and overgrown with wild plants and creepers, that crawl over and shoot among the fallen ruins; sedums, wall-flowers, and other vegetables that bear drought, find nourishment in the decayed cement from which the stones have been detached; birds convey their food into the chinks; and yew, elder, and other berry bearing plants, project from their sides; while the ivy mantles over other parts, and crowns the top. The even regular lines of the doors and

windows, are broken ; and through their ivy fringed openings is displayed in a more broken and picturesque manner, that striking image of Virgil :

*Apparet domus intus et atria longa patescunt*  
*Apparent Priami et veterum penetralia regum.*

There is not much analogy between a tree and a human figure, but there is a great deal in the particular qualities which make either of them beautiful or picturesque : almost all the qualities of beauty, as might naturally be expected, belong to youth ; and among them all, none is more consonant to our ideas of beauty, or gives so general an impression of it, as freshness ; without it, the most perfect form, wants its most precious finish ;—wherever it begins to fade, wherever marks of age or unhealthiness appear, though other effects, other sympathies, other characters may arise, there must be a diminution of beauty. Freshness belongs equally to human and to vegetable beauty, and is diffused over the whole appearance ; many particulars likewise have a mutual analogy ; the luxuriance of foliage answers to that of hair ; the delicate smoothness of bark to that of the skin, and the clear, even, and tender colour of it : there is in both also, though much more sensibly

sensibly in the skin, another beauty, arising from a look of softness and suppleness, so opposite to the hard and dry appearance produced by age.

“ The earliest and most perceptible attacks of time are made on the bark and on the skin, which at first, however, merely lose their evenness of surface, and perfect clearness of colour ; by degrees the lines grow stronger in each, the tint more dingy, often unequal, and in spots ; and in proportion as either trees, or men, and women, advance towards decay, the regular progress of time, and often the effects of accident, occasion great and partial changes in their forms. In trees, the various hollows and inequalities which are produced by some parts failing, and others in consequence falling in ; from accidental marks and protuberances ; and from other circumstances, which a long course of years gives rise to, are obvious ; and many correspondent changes in the human form are no less obvious. By such changes, that nice symmetry and correspondence of parts, so essential to beauty, is in both destroyed ; in both, the hand of time traces still deeper furrows, and roughens their surface ; a few hairs, a few leaves, are thinly scattered on their

summits; the light airy aspiring look of youth is gone, and both seem shrunk and tottering, and ready to fall with the next blast.

“ Such is the change from beauty ! and to what ? Surely not to an higher or to an equal degree, or to a different style of beauty ; no, nor to any thing that resembles it ; and yet that both these objects, even in this last state, have often strong attractions for painters, their works afford sufficient testimony ; that they are called *picturesque*, the general application of the term to such objects makes equally clear ; and that they totally differ from what is beautiful, the common feelings of mankind no less convincingly prove. One misapprehension should be guarded against : the instances here given, are not adduced to prove that an object to be picturesque, must be old and decayed, but that the most beautiful objects will become so by age and decay ; and I believe it is equally true, that those which are naturally of a strongly marked and peculiar character, are likely to become still more picturesque by the process I have mentioned.

“ The picturesque is no less distinct from the sublime, than from the beautiful ; uniformity (which is so great an enemy to the picturesque),



turesque), is not only compatible with the sublime, but is often the cause of it; that general, equal gloom, which is spread over all nature, before a storm, with the stillness so nobly described by Shakespeare,\* is in the highest degree sublime. The picturesque requires greater variety, and does not shew itself till "the dreadful thunder has rent the region," has tossed the clouds into a thousand towering forms, and opened as it were the recesses of the sky.

"Again, (if we descend to earth) a perpendicular rock of vast height and bulk, though bare and unbroken, a deep chasm, under the same circumstances, are objects which produce awful sensations; but without some variety or intricacy, either in themselves, or in their accompaniments, they will not be picturesque; lastly, a most essential difference between the two characters is, that the sublime by its solemnity, takes off from the loveliness of

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\* "And as we often see against a storm  
A silence in the heavens, the wrack stand still,  
The bold wind speechless, and the orb itself  
As hush as death, anon the dreadful thunder  
Has rent the region."—

of beauty, whereas the picturesque renders it more captivating."

To this account of the picturesque, and, indeed, at the same time to Burke's definition of beauty, Knight objected, in a note to the second edition of the *Landscape*. "When harmony," says he, "either in colour or surface becomes absolute unity, it sinks into what, in sound, we call monotony; that is, its impression is so languid and unvaried, that it produces no farther irritation on the organ, than what is necessary for mere perception; which though never totally free from either pleasure or pain, is so nearly neutral, that by a continuation it grows tiresome; that is, it leaves the organ to a sensation of mere existence, which seems in itself to be painful.

"If colours are so harsh and contrasted, or the surface of a tangible object so pointed or uneven, as to produce a stronger or more varied impression than the organ is adapted to bear, the irritation becomes painful in proportion to its degree, and ultimately tends to its dissolution.

"Between these extremes, lies that medium of grateful irritation, which produces the sensation of what we call beauty; and which, in  
visible

visible objects, we call picturesque beauty ; because painting, by imitating the visible qualities only, discriminate it from the objects of other senses with which it may be combined ; and which if productive of stronger impressions, either of pleasure or disgust, will overpower it ; so that a mind not habituated to such discriminations, or (as more commonly expressed) a person not possessed of a painter's eye, does not discover it till it is separated in the artist's imitation. Rembrandt, Ostade, Teniers, and others of the Dutch painters, have produced the most beautiful pictures, by the most exact imitations of the most ugly and disgusting objects in nature ; and yet it is physically impossible, that an exact imitation should exhibit qualities, not existing in its original ; but the case is, that in the originals, animal disgust, and the nauseating repugnance of appetite, drown and overwhelm every milder pleasure of vision, which a blended variety of mellow and harmonious tints must necessarily produce on the eye, in nature as well as art ; if viewed in both with the same degree of abstracted and impartial attention."

In reply to this, Price wrote his dialogue on the distinct characters of the picturesque and beautiful ;

beautiful; he supposes, "a ruinous hovel on the outskirts of a heathy common; in a dark corner of it, some gypsies are sitting over a half extinguished fire, which every now and then, as one of them stoops down to blow it, feebly blazes up for a moment, and shews their sooty faces and black tangled locks. An old male gypsey stands at the entrance, with a countenance expressive of his threefold occupation, of beggar, thief, and fortune-teller; and by him a few worn-out asses; one loaded with rusty panniers, the others with old tattered cloathes and furniture. The hovel is propped and overhung by a blighted oak; its bare roots starting through the crumbling bank on which it stands; a gleam of light from under a dark cloud, glances on the most prominent parts; the rest is buried in deep shadow, except where the dying embers, "teach light to counterfeit a gloom." Such a scene is picturesque. Is it beautiful? Change the hovel into a pavilion, the gypsies into elegant figures, the asses into pampered steeds, the blasted oak into a flourishing plane tree; and diffuse over the whole, one rich mellow light, you will then have a beautiful scene. Is not the difference of character in these scenes, sufficient to justify, and even



even to require the use of different terms, to designate them? The parsonage house is as irregular as possible, but the whole has an air of neatness and comfort. Is this to be praised in exactly the same expressions as you would assign to an elegant villa, or to the wretched hovel above mentioned?—The good parson's daughter is made on the model of her father's house; her features are irregular, and her eyes somewhat inclined to look across each other, like the roofs of the old parsonage; but a clear skin, clean white teeth, though not very even, and a look of neatness and cheerfulness, makes one look at her with pleasure; yet no one would call her beautiful. Suppose a man with a large arched nose, dark skulking eyes, shaggy eye-brows, and raven hair; let him wear a slouched hat, and a cloak calculated to conceal a weapon. Is this a beautiful object? and are the dark wrinkled skin and grisly beard of the old gypsey, and the tender complexion of a beautiful woman, all to be characterised by the same epithet?

“ If in passing through a village or town, you see an ox hung up in the shambles, you do not stop to examine it. A picture of Rembrandt's on the same subject, excites the liveliest admiration :

admiration : but then in the painting, the object is smaller, and the colours more kept down. The real carcase of an ox seen reflected in a concave mirror, and especially if that were of the dark kind, would lose part of its disgusting appearance ; and if an ox were painted by Denner instead of Rembrandt, and of its full size, it would hardly be less disgusting than the real ox hung up in the shambles."

This is, I believe, a fair and pretty full statement of the argument for the use of the word *picturesque*, as distinguished from the *beautiful*. We must bear it in mind, that Price does not, in *any degree*, found this distinction in pictures, but draws it immediately from the character of the objects themselves. " It has indeed been pointed out, and illustrated by that art ; but is not this," he continues, " also the case with beauty ? nay, according to the poet, beauty was even brought into existence by it.

Si Venerum Cous nunquam posuisset Apelles,  
Mersa sub æquoreis illa lateret aquis.

" Examine the forms of those painters who lived before the age of Raphael, or in a country where the study of the antique had not yet taught them to separate what is beautiful from the general mass ; we might almost conclude,  
that

that beauty did not then exist. Yet those painters were capable of exact imitation, though not of selection ; compare the landscapes and backgrounds of such artists with those of Titian ; nature was not changed, but a mind of a higher cast, and instructed by the experience of all who had gone before, rejected minute detail, and pointed out by means of such selections and such combinations, as were congenial to its own sublime conceptions, in what forms, in what colours, and in what effects, grandeur in landscape consisted.

“ There is one circumstance particularly adverse to this part of my essay ; I mean the manifest derivation of the word *picturesque*. The Italian *pittoresco* is I imagine of earlier date than either the English or the French word, the latter of which, *pittoresque*, is clearly taken from it, having no analogy to its own tongue. *Pittoresco* is derived not like the English word, from the thing painted, but from the painter ; and this difference is not wholly immaterial ; for one refers to a particular imitation, and the objects which may suit it ; the other to those objects which from the habit of examining all the peculiar effects, as well as the general appearance of nature, an artist may be struck with,

though



though a common observer may not ; and that independently of the power of representing them. The English word naturally draws the reader's mind towards pictures, and from that partial and confined view of the subject, what is in truth, only an illustration of picturesqueness becomes the foundation of it.

“ From what has been already said, it will easily be understood, that picturesque objects are by no means exclusively adapted to painting ; they are not even adapted in any higher degree than beautiful ones. What is the rank which Corregio, Guido, and Albano hold among painters ; or Raphael the highest name among the moderns ? and, if we go back to the ancients, what are the pictures that were most admired while they existed, and whose fame is as fresh as ever ? The Venus of Apelles, the Helen of Zeuxis ; pictures in which ruggedness, abruptness, and sudden variation could have no place.”

Knight supports his opinion, and enters into a further explanation of it, in his *Analytical Enquiry*. “ The pleasure,” he observes, “ arising from the contemplation of beauty is not merely sensual, but depends on various associations and mental sympathies. The eye, unassisted, perceives nothing but light and colour, as the deception

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tion produced by the art of painting abundantly prove; and as pleasure lies in the medium between dull uniformity and harsh and painful irritation, mere visible beauty will consist in harmonious, yet brilliant and contrasted combinations of light, shade, and colour; blended but not confused, and broken but not cut into masses, and it is not in straight or curved, taper or spiral, long or short, little or great objects that we are to seek for these; but in such as display to the eye intricacy of parts, and variety of tint and surface. Such are animals which have loose shaggy and curly hair; trees whose branches are spread into irregular forms, and exhibit broken and diversified masses of foliage, and whose trunks are varied with masses and lichens, enriched with ivy; buildings that are mouldering into ruin, whose sharp angles are softened by decay, and whose crude and uniform tints are mellowed and diversified by weather stains and wall plants; streams that flow alternately smooth and agitated, between broken and sedgy banks, reflecting sometimes clearly and sometimes indistinctly the various masses of rock and foliage that hang over them; in short, almost all those objects which Mr. Price has so elegantly described as picturesque; for painting,

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ing, as it imitates only the visible qualities of bodies, separates these qualities from all others, which the habitual concurrence and co-operation of the other senses have mixed and blended with them in our ordinary perceptions.

“ In many of the objects of these mixt sensations there must necessarily occur a mixture of pleasing and displeasing qualities; or of such as please one sense and displease another; or please the sense and offend the understanding, or the imagination. These, painting separates, and in its imitations of objects, which are pleasing to the eye but otherwise offensive, exhibits the pleasing qualities only; so that we are delighted with the copy, when we should perhaps, turn away with disgust and abhorrence from the original. Decayed pollard trees, rotten thatch, crumbling masses of perished brick, and plaster, tattered worn-out dirty garments, a fish or a flesh market, may all exhibit the most harmonious and brilliant combinations of tints to the eye; and harmonious and brilliant combinations are certainly beautiful in whatsoever they are seen; but nevertheless these objects contain so many properties that are offensive to other senses, or to the imagination, that in nature, we are not  
pleased

pleased with them nor ever consider them as beautiful. Yet in the pictures of Rembrandt, Ostade, Teniers, and Fyt, the imitations of them are unquestionably beautiful, and pleasing to all mankind; and as these painters are remarkable for the fidelity of their imitations, whatever visible objects existed in the originals must appear in their copies of them; but in these copies the mind only perceives the visible qualities; whereas in the originals, it perceived others, less agreeable, united with them. Painters indeed, and persons much conversant with painting, often feel pleasure in viewing the objects themselves: but this is from a principle of association, which will be hereafter explained.

“ Mr. Price indeed denies that the imitations of such objects can ever produce beautiful, that is lovely, pictures; and if beautiful is thus limited to the sense of lovely, perhaps the point is not worth contesting; though even with this arbitrary and unexampled limitation, I can produce at least equal authority in support of a contrary opinion,

“ D’un pinceau délicat, l’artifice agréable

“ Du plus affreux objet, fait un objet aimable.”

*Boileau, Art poétique, c. iii.*



“ The beauty of those whimsical and extravagant paintings, called from the subterraneous apartments in Rome, where the first specimens of them were found, *grotesque*, has never I believe been questioned ; the brilliancy and variety of the tints, have afforded pleasure to every eye ; and the airy lightness, and playful elegance of the forms, to every imagination that has been acquainted with them ; yet were we to meet with such extravagant and disproportioned buildings in reality ; or such monstrous combinations of human, animal, and vegetable forms in nature ; our understandings would revolt at them, and we should turn from them with scorn and disgust ; but, in judging of the imitative representations of them, we do not consult our understandings, but merely our senses and imaginations, and to them they are pleasing and beautiful.

“ I am aware that I am here laying myself open to the cavils of a captious adversary ; who may accuse me of calling the tattered rags and filth of a beggar, or the extravagant monsters of grotesque, beautiful ; because I assert that they contain beautiful variations of tint or light and shadow : but he may with equal justice accuse me of calling a dunghill sweet, be-  
cause



cause I assert that it contains sugar; and that the sugar when separated from the dross, will be of the same quality as that extracted from the cane. In the same manner the beautiful tints and lights and shadows when separated in the imitation from the disagreeable qualities with which they were united are as truly beautiful as if they had never been united with any such qualities, properly those subjects only can be called sweet in which the qualities of sweetness predominate; and those only beautiful in which the qualities of beauty predominate; but if there be any means as those abovementioned, of separating the subordinate sweet, and beautiful, qualities from those of a contrary kind; there can be no reason why they should be less sweet, or less beautiful, when separated, than if they had never been mixt. Thus the gypsies' hut as a mere object of sense may be as beautiful as the elegant pavilion. The lights and shades may be as well arranged, the colours as beautiful and as harmoniously blended, and the different nature of the emotions excited arises entirely from the associated ideas, without depending at all on the smoothness, regularity, or gradual variation of the one; or the roughness, abruptness or irregularity, of the other. In-

deed the great error which pervades the otherwise able and eloquent *Essays on the Picturesque*, is the attributing to external objects distinctions which only exist in the modes or habits of viewing them."

It will be perceived that in these observations on Price, I have united to his essays on the picturesque, his dialogue on the distinct characters of the picturesque and beautiful, and his letter to Repton. The two former have furnished the remarks of the foregoing part of this essay, the first and the last, exhibit the reasons for the application of the study of pictures to architecture and the embellishments of grounds.

This question of the expedience of the study of paintings, as far as it relates to the landscape gardener seems to me compressible into a very small compass. The object of painters is to please; at first they endeavoured to do this by the mere excellence of imitation; the next step was to select what was most beautiful in nature, as it required no great depth of penetration to understand, that an equally correct imitation of a beautiful object, must be more pleasing than that of one less beautiful. The third and last step was by selecting the most beautiful parts of various scenes, and  
combining

combining them in such modes as experience proved to be the most generally interesting; by uniting into masses the less important parts, and only shewing the more perfect strongly in detail; to produce a whole more harmonious, more graceful, more delightful than nature ever exhibited. Such being the process of painting we may safely refer to such of its efforts as have attained general and lasting reputation as to standards of grace and beauty. For the only standard to which we can refer in objects of taste is the general opinion of civilized mankind; not that of the inhabitants of one country, or of one period; but as far as is possible of all ages, and all countries. Many ages, and many nations, have concurred to pronounce excellent, paintings which still exist: and we may therefore with as much confidence as is consistent with the nature of the subject, pronounce that these are beautiful. But are they beautiful on canvass only? or would such scenes be beautiful in nature also? Look at a landscape of Claude or of Salvator Rosa and think whether in nature such scenes would call forth your admiration. But there are some scenes which we admire in a picture which would in nature be absolutely disgusting; and



such are many of the paintings of Teniers and Rembrandt. According to Knight such scenes are really pleasing in themselves, from the grateful combinations of light and colour they present, but disgust in reality from various disagreeable associations which are there inseparably connected with them, but which we do not carry into the picture. In adhering to Price I am afraid we shall not so easily get over the difficulty; but, whatever reason may be assigned, all parties are agreed that such objects if they do not please in reality ought not in realities to be introduced, and it will afford no argument against the study of such painters as Claude or Titian with whose objects no contemptible or disgusting ideas can be imagined to be necessarily associated.

Between these classes of objects there are many intermediate degrees. The cottage of the labourer is sometimes introduced with the happiest effect, and who in nature or art, can see peace and content, united to the exertions of honest industry, without some agreeable emotions, has a taste, which I am by no means solicitous to please. But the decayed cottage, and half starved horse can only be defended on the same plea as the filth of Rembrandt



brandt and indecency of Teniers, though a lover of pictures, will more readily learn to admire these in nature as the disagreeable impressions are less strongly excited.

Another objection has been made to the plan of improving natural scenery by the study of pictures: you must sacrifice convenience and comfort. No, it is replied, study paintings and improve from them your own scenery as far as is consistent with these objects, which must be paramount to all others; and do not as is now frequently the case, destroy beauty and comfort too for the sake of some idle notions of neatness and smoothness. The same argument will doubtless apply, though perhaps with some limitations, to the practice of the architect, but as convenience is still more important in the house it becomes more difficult to unite it with beauty.

After having examined, as well as my abilities will permit, what there is of theory in the works of Price, I shall now advert to what he says of the application of his principles to architecture. This is comprised under two heads. He recommends the accompaniments of terraces, dwarf walls, vases, &c. and prefers irregular houses to such as are uniform. In nature, he  
observes,

observes, broken ground ornamented with shrubs and creeping plants is particularly pleasing. In art, terraces adorned with vases, or with sculpture, produce the same or, at least, a corresponding effect, though with more regularity : they serve too to connect the house with the ground, and take off from the naked abrupt appearance which is the result of the modern practice of setting the house in the middle of a field. Their ornaments moreover are, or may be, beautiful in themselves, besides the improvement in the general appearance of the house and its immediate vicinity; and repay the observer for an individual examination.

Irregular houses are recommended as picturesque, that is because they are irregularly pleasing. This however is not a ground of preference, as what is regularly pleasing in an equal degree will certainly hold an equal rank. Knight takes a bolder stand, and maintains that they are more pleasing than regular ones; which indeed he affects to consider, as little short of disgusting. It seems to me however that the decided preference that both authors certainly give to irregular edifices is not perfectly consistent with their own views of beauty. Price says, some of the most striking and varied compositions  
both

both in painting and in nature are those where the most distant view (whatever be the degree of its extent) is seen between the stems, and across, and under the branches of large trees; and where some of those trees are very near the eye. But where trees are so disposed, a house with a regular extended front could not be built without destroying, together with many of the trees, the greatest part of such well composed pictures. Now if the owner of such a spot, instead of making a regular front and sides were to insist upon having many of the windows turned towards those points where the objects were most happily arranged, the architect would be forced into the invention of a number of picturesque forms, and combinations, which otherwise might never have occurred to him, and would be obliged to do what so seldom has been done—accommodate his building to the scenery, not make that give way to his building.

“ Many are the advantages, he continues, both in respect to the outside and to the inside that would result from such a method. In regard to the first it is scarcely possible that a building on such a plan, and so accompanied, should not be an ornament to the landscape, from

from whatever point it might be viewed. Then the blank spaces that would be left where the aspect suddenly changed (which by the admirers of strict regularity would be thought incurable blemishes) might, by means of trees, and shrubs, or of climbing plants, trained about wood, or stone work, be transformed into beauties: which at the same time that they were interesting in the detail, would very essentially contribute to the rich effect of the whole.

“ Such a disposition of the outside would also suggest to an artist of genius, no less varied and picturesque effects within; and the arrangement of the rooms, would often-times be at least as convenient as in a more uniform plan; nor would a house of this kind be admired by men of a picturesque taste only; for it may be observed that men in general are apt to be pleased with an appearance of irregularity in the distribution of a house, and in the shapes of the rooms, and even to conceive an idea of comfort from it. With respect to the improvement of the view, there can be no doubt; and whatever constitutes a good foreground to the view from the house will, generally speaking, have an equally good effect from every other point.”

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This is not, however, considering the subject in a fair point of view; there are doubtless particular circumstances and situations which may make irregularity desirable in a residence; but suppose there were no trees, and that without any very bold and striking projections in the soil, the whole foreground was to be formed as well as the house; in such a case ought the building to be irregular?

“ In the old system of laying out ground,” says Mr. Knight, “ the incongruity between the regularity of the building, and the irregularity of the surrounding scenery, was in a great degree obviated; for the house being surrounded by gardens as uniform as itself, and only seen through vistas at right angles, every visible accompaniment was in unison with it; and the systematic regularity of the whole, discernible from every point of sight; but when according to the modern fashion, all around is levelled and thrown open; and the poor square edifice exposed alone, or with the accompaniment only of its regular wings, and portico, amidst spacious lawns, interspersed with irregular clumps, or masses of wood, and sheets of water, I do not know a more melancholy object: it neither associates nor harmonizes with any thing; and, as the beauties of symmetry which  
might

might appear in its regularity, are only perceived when that regularity is seen; that is, when the building is shown from a point of sight, at right angles with one of the fronts, the man of taste takes care that it never shall be so shown; but that every view of it shall be oblique, from the tangent of a curve in a serpentine walk; from whence it appears neither quite regular nor quite irregular; but with that sort of lame and defective uniformity, which we see in an animal that has lost a limb."

In reply to this we may observe that the human face is as correctly uniform in its parts as a modern Grecian villa, and though perhaps to Mr. Price it might suggest some ideas of convenience if one eye and one ear were larger than the other, as it might seem sufficient to have one principal organ for each sense, while the other would be a mere sketch to serve occasionally when the principal should be tired or out of order; or might be ready for nature to finish should any accident happen to the latter, yet for some reason or other, this to the rest of mankind, would seem a defect: but though regularity in the features is thus universally pleasing we do not wish our portraits to be painted with the full face, but prefer having them somewhat turned on one side or the other;

other; this would seem to indicate, that there is something in regularity pleasing to the understanding, but not to the eye: and this exactly is what is offered to us, when a regular mansion is viewed sideways, or is partially concealed by trees; and why in this case it should be said to have a lame and defective uniformity, like that of a man who had lost an arm, any more than that the regularity of the face should be esteemed lame and defective unless both eyes were shown; would I believe puzzle Mr. Knight with all his ingenuity to explain.

We are however certainly disgusted with an appearance of regularity in many objects, where it is not usually exhibited, and I dare not take upon me to assert that the regular structure, must be necessarily the most beautiful; (though I think the general voice of mankind would favour this opinion) but I certainly do not hesitate to maintain that it is not necessarily the least beautiful.

When I began this essay I intended to have reviewed various books on the subject of gardening, an art closely allied to architecture, but though I might say much on the books, I should have little to observe on the subject, and such an extension of it would take up your  
time



time and my own without any adequate information. I shall therefore merely mention a few of the principal. Wheatly has many beautiful descriptions; and there are certainly some good ideas among the trick and affectation of D'Ermenonville. Sir William Chambers's book is an extravagance. The poems of Mason, of the Abbé de Lille, and of Knight, have all some merit. Repton's ideas of beauty, appear to depend upon expense: and the excessive love of glitter, and ostentation pervades all his works; but what opinion can we form of the consistency of an artist, who at one time modestly asserts that his drawings are too much like nature, to please connoisseurs, \* and at another boldly claims for them the rank of *complete painters' compositions*.†

The only remaining author I have to examine on taste, is R. P. Knight, from whose writings I have frequently received assistance in my remarks on other writers, but whose want of method and arrangement, renders it difficult  
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\* Observations on the Theory and Practice of Landscape Gardening, p. 108.

† Enquiry into the Changes of Taste in Landscape Gardening, p. 122.



to give a fair and regular account of *The Analytical Inquiry into the Principles of Taste*. The author has not even any where given an explicit statement of the objects of the work. Where he exposes the errors of others, he is sufficiently clear; but though he appears to be endeavouring to establish a system of his own, it is not easy to comprehend what that system is. He explains parts of it with great force of reasoning, and great happiness of illustration; but does not connect the parts so as to form a clear and consistent whole. The attentive perusal of his book would induce one to conclude that he conceived mental sympathies to be the sole origin of the pleasures of taste; yet some passages seem to contradict such an opinion, and the concluding section of his work is said to be devoted to prove, that novelty is the real principle of happiness. I say, said to be devoted, because perhaps the person who read the section might doubt the fact, if the table of contents did not assure him of its truth. Considering however the principle just mentioned as the leading one of the work, I shall follow the author as closely as seems necessary for my object; enlarging, according to the plan I have before adopted, where the subject is, or may

be, connected with architecture, and passing more slightly over the other parts. In some degree, indeed, every part is connected, if not with architecture, at least with architects; for where the attainment of beauty is, in any degree, the object of an art, the cultivation of taste is a point of importance to its professors.

The introduction contains, what the author denominates, a sceptical view of the subject, in which he endeavours to prove that there are no fixed principles of taste. The arguments he uses proceed all on the same foundation; the multitude of false tastes that have appeared in the world. "A few years ago," he observes, "a beauty equipped for conquest  
" was a heterogenous combination of incoherent forms, which nature could never have  
" united in one animal, or art blended into one  
" composition: it consisted of a head, disguised so as to resemble that of no living  
" creature, placed on an inverted cone, the  
" point of which rested on the centre of the  
" curve of a semi-elliptic base, more than three  
" times the diameter of its own. Yet if high  
" head dresses, tight laced stays, and wide  
" hoops, had not been thought really ornaments  
" tal,

“ tal, how came they to be worn by all who  
“ could afford them? Let no one imagine  
“ that he solves this question, by saying that  
“ there have been errors in taste, as well as in  
“ religion and philosophy; for the cases are  
“ totally different; religion and philosophy  
“ being matters of belief, reason, and opinion;  
“ but taste being a matter of feeling, so that  
“ whatever was really and considerably *thought*  
“ to be ornamental, must previously have  
“ been *felt* to be so.” Other examples are ad-  
duced to establish the same position, but as they  
all rest on the same ground, the same argu-  
ments which disprove the one, will apply to  
the rest.

Without rejecting the principle that ‘ cus-  
tom is the rule of language,’ I think that I  
may be allowed to observe, that, in “ the laxity  
of colloquial conversation,” (to use an expression  
of our author) the same word is attributed to  
different objects, and frequently to some to  
which it would not strictly apply; but that in  
a philosophical disquisition, especially where  
the subject is in its nature obscure, it is neces-  
sary to use words with greater accuracy, and  
even in some cases to confine their meaning  
more strictly than custom authorises. The

word *beauty*, seems to me to require an analysis before we can come to a satisfactory determination of the justness of taste; many things are said to be beautiful, which excite admiration. Alison pleads for the beauty of the snout of a hog, from its being so admirably calculated for the purposes for which it is intended; and there can be no doubt that the perception of the fitness of means to an end is a source of considerable pleasure; but pleasure of a totally different class, from that we enjoy from the contemplation of a rose, or a graceful ornament. The association of pleasing ideas will make an object appear beautiful to one person, which is not so to the rest of the world: but that it is not properly beautiful his own feelings would sufficiently prove, as the addition of circumstances which in any other place would enhance the pleasure, would in this diminish, or totally destroy it, by weakening the associations. When, however, these associations are not particular, but universal, and arise from the constitution of our nature, or from the necessary conditions of civilized life, common use will pronounce the objects which excite them beautiful, and I do not wish to fight unnecessarily against custom: let us however always



ways keep in mind, that this pleasure is different from that which arises from what may be more strictly, and philosophically termed beauty. In cases of this sort it is necessary that the relation should be obvious, and immediate. A house may be called beautiful, from an appearance of comfort and convenience, but if it have not a striking appearance of those qualities, no knowledge that we may possess of its advantages will justify our calling it so. Indeed I doubt if the term is ever used by a person without theory, and not in the habit of conversation with persons accustomed to theories, with the intention of expressing any other mode of pleasure, than that produced by mere unassociated beauty: but being unaccustomed to examine what passes in his own mind, he attributes to one, a pleasure, which in fact arises from another source. This I conceive to be decidedly the case in objects of fashion; they are associated not only with the splendour of superior rank, and with the love of distinction, the universal, I had almost said the only passion, not immediately relating to sensual pleasure, but also with what is really beautiful and elegant in the dress, the manners, the apartments of the rich and gay.

It would perhaps have been sufficient to shew the doctrine of Knight to be false by referring to those objects in nature which are universally acknowledged beautiful. If mankind is agreed that a swan is a more beautiful bird than a goose, some forms must be fitted by the constitution of our nature, to produce more pleasure than others; that is, some are essentially more beautiful than others; but it appears to me also to be expedient to examine the sources of errors. In the examples adduced by Knight, I believe beauty has not been sought for. The object was admiration, in the first instance, and afterwards, in fashion, the fear of singularity; and when from these motives any form has been admitted among the great, its association with objects of wealth and splendour, would excite pleasing ideas; which, as before observed, would, by those not accustomed to examine the progress of their thoughts, be said to arise from their intrinsic beauty. If we apply this principle to the fine arts we shall not find it necessary to suppose Michael Angelo or Bernini insincere in their praises of the Greek sculpture; they saw beauty, but they followed distinction; and the same may be said of the writers, who applaud " in quaint phraseology  
" and

“ and epigrammatic points, the simple purity  
 “ of Xenophon, Cæsar, and Swift, and con-  
 “ demn in others the very style they employ  
 “ themselves;” for the desire of distinction,  
 leads them to a deviation of which they are  
 perfectly conscious, and self-love blinds them to  
 their own defects: and thus they highly over-  
 value their own writings, even while they  
 admire those most different from them.

I fear I should be tiresome, if I were to  
 examine the detail of Mr. Knight's observations  
 of the senses: as in taste, and smell, he ac-  
 knowledges that we may receive mere sensual  
 pleasure from the other senses, but these are  
 not the pleasures in which the man of taste de-  
 lights. In sight, he confines these pleasures to  
 light and colour, excluding form as a source of  
 organic pleasure. In this, as in the former  
 part, he chuses sometimes to confound other  
 pleasures with those which I have considered  
 as exclusively belonging to beauty, and vindic-  
 ates the grazier who considers an animal beau-  
 tiful, in proportion to the quantity of market-  
 able flesh which the animal in the least possible  
 time, and with the least possible quantity of  
 food, may bring into the shambles. Yet sure-  
 ly, though the public may and must give the



law to language, yet it is not to one class of the public that we must defer. In all trades, probably, there will be a tendency to consider that as beautiful, which is conducive to profit ; but if the pleasures of taste arise, as Knight supposes, (and as he is possibly right in supposing) from mental sympathies, does it follow that we are to sympathise with any class of people in the desire of gaining wealth, or to consider objects as beautiful, from exciting such sympathy ? though such a desire, within proper bounds, is not only blameless, but commendable ; and by no means a selfish passion, but one on which the welfare of a considerable number of people may depend.

In the second part, Knight treats of the association of ideas, and the pleasures arising from it ; one of which is, that which we receive from mere imitation. “ Man,” says he, “ is by nature an imitative animal ; and as “ those faculties of his mind by which he has “ risen so much above the rest of the creation, are owing in a great degree to one individual imitating another, and still adding “ something to what he had acquired ; imitation is both naturally and habitually pleasing “ to him ; hence there is no effort of painting “ or



“ or sculpture so rude, no composition in  
“ music or poetry so artless, as not to delight  
“ those who have known no better; and per-  
“ haps the pleasures which the ignorant feel  
“ from mere imitation, when it has arrived at  
“ any degree of exactitude, are more keen and  
“ vivid, though less exquisite and exalted, than  
“ those which the learned in arts receive from  
“ the noblest of its productions; at least I have  
“ seen more delight expressed at a piece of  
“ wax-work or a painting of a mackarel on a  
“ deal board, or a pheasant on a table, than I  
“ have observed to be produced by the Apollo  
“ of the Belvedere, or the Transfiguration of  
“ Raphael. It is true that the vulgar express  
“ their feelings more boisterously and impe-  
“ tuously than the learned; but it is also true,  
“ that the feelings of nature have universally  
“ more of rapture in them than those which  
“ are excited through the medium of science.  
“ These feelings of nature however are of very  
“ short duration: for when the novelty of the  
“ first impression is over, and the interest of  
“ curiosity and surprise subsided, mere imita-  
“ tion of common objects begins to appear  
“ trifling, and insipid: and men look for, in  
“ an imitative art, something of character,  
“ and

“ and expression, which may awaken sym-  
“ pathy, excite new ideas, or expand and ele-  
“ vate those already formed.

“ Another source of pleasure in works of  
“ art, arises from the exhibition of the skill of  
“ the artist; for, as great skill, and power, and  
“ a masterly facility of execution, raise our  
“ admiration, and consequently excite pleasing,  
“ and exalted ideas; we by a natural and im-  
“ perceptible process of the mind, associate  
“ these ideas with those excited by the produc-  
“ tions of the liberal arts, and thus transfer the  
“ merit of the workman to the work.” The  
skill displayed in overcoming difficulties will  
also excite a pleasure of this kind, though in  
many respects much inferior, and sometimes  
accompanied by a degree of disgust, at the  
appearance of perverted ingenuity.

“ Much of the pleasure which we receive  
“ from painting, sculpture, music, poetry, &c.  
“ arises from our associating other ideas with  
“ those immediately excited by them. Hence  
“ the productions of these arts are never  
“ thoroughly enjoyed, but by persons whose  
“ minds are enriched by a variety of kindred  
“ and corresponding imagery; the extent and  
“ compass of which, allowing for different  
“ degrees

“ degrees of sensibility and habits of atten-  
“ tion, will form the scale of such enjoy-  
“ ment.

“ Neatness, freshness, lightness, sym-  
“ metry, regularity, uniformity and propriety,  
“ are beauties of the highest class; though the  
“ pleasure they afford, is not simply a plea-  
“ sure of the sense of seeing, nor one receiv-  
“ ed by the mind through the medium of  
“ painting; but upon the same principle, as  
“ the association of ideas renders those quali-  
“ ties in visible objects, which are peculiarly  
“ appropriate to painting, peculiarly pleasing  
“ to those conversant in that art; so likewise  
“ does it render these qualities, which are pe-  
“ culiarly adapted to promote the comforts and  
“ enjoyments of social life, pleasing to the  
“ eye of civilized men, though there be no-  
“ thing in the forms and colours of the ob-  
“ jects themselves, in any degree pleasing to  
“ the sense; but perhaps the contrary.

“ For this reason we require, that imme-  
“ diately adjoining the dwellings of opulence  
“ and luxury, every thing should assume its  
“ character, and not only *be*, but *appear* to be,  
“ dressed and cultivated. In such situations,  
“ neat gravel walks, mown turf, and flower-  
“ ing

“ ing plants and shrubs, trained and distributed  
“ by art, are perfectly in character ; although  
“ if the same buildings were abandoned and  
“ in ruins, we should on the same principle of  
“ consistency and propriety, require neglected  
“ paths, rugged lanes, and wild uncultivated  
“ thickets, which are, in themselves, more  
“ pleasing, both to the eye and the imagination,  
“ but unfit accompaniments of objects,  
“ not only originally produced by art, but in  
“ which art is constantly employed and exhibited.  
“ Nevertheless, a path shaggy and neglected,  
“ or a picturesque lane between rugged or broken banks,  
“ may be kept as clean,  
“ and commodious, for the purpose of walking,  
“ as the neatest gravel walk ; wherefore it  
“ is not on any principle of reason, that the  
“ preference in such situations is given to the  
“ latter, but merely from the habitual association of ideas.

“ This sort of neatness should, on the  
“ same principle, be confined to the immediate  
“ appendages of the house, that is, to the  
“ grounds which are so connected with it as  
“ to appear necessary adjuncts to the dwelling ;  
“ and therefore to be under the influence of  
“ the same character, which is a character of  
“ art.



“ art. On this account the avowed character  
“ of art of the Italian gardens, is preferable in  
“ garden scenery, to the concealed one now in  
“ fashion; which is in reality rather counter-  
“ feited, than concealed; for it appears in  
“ every thing, but appears in a dress which  
“ does not belong to it: at every step we per-  
“ ceive its exertions; but at the same time per-  
“ ceive it has laboured much to effect little,  
“ and that while it seeks to hide its character,  
“ it only, like a prostitute who affects modesty,  
“ discovers it the more.

“ That the sense of propriety or congruity  
“ in the style of buildings, is entirely artificial,  
“ and acquired by the habitual association of  
“ ideas, we need no other proof than its being  
“ wholly dependent on variable circumstances;  
“ in the pictures of Claude and Gasper Pous-  
“ sin, we perpetually see a mixture of Grecian  
“ and Gothic architecture employed with the  
“ happiest effect in the same building. The  
“ temples, tombs, and palaces of the Greeks  
“ and Romans in Italy, were fortified with  
“ towers and battlements by the Goths and  
“ Lombards, in the middle ages; and such  
“ combinations are thus naturalized in the  
“ country, and are in perfect harmony with  
“ the

“ the scenery ; and far from interrupting the  
“ chain of ideas, they lead it on, and extend  
“ it, through different ages, and successive re-  
“ volutions, in tastes, arts and sciences.

“ Such combinations have been in some  
“ degree naturalized in our own country, as  
“ well as in Italy ; though in a different order  
“ of succession, the Gothic having preceded the  
“ Grecian : the effect is nevertheless the same ;  
“ the fortresses of our ancestors, which in the  
“ course of the two last centuries, were trans-  
“ formed into Italianized villas, and decked  
“ with the porticos, balustrades, and terraces of  
“ Jones, and Palladio, affording in many in-  
“ stances, the most beautiful compositions, es-  
“ pecially when mellowed by time, and ne-  
“ glected and harmonized, and united by ivy,  
“ mosses, lichens, &c.”

I think in this doctrine there is much  
that may be doubted, though perhaps little  
that could be disproved ; and the attempt (per-  
haps unsuccessful at last) would lead me into  
a most unreasonable trespass on the time of  
the society. I may however observe, in pass-  
ing, that this historic train of ideas, does not  
seem to be exactly that which should be excited  
by the view of an inhabited house, unless in-  
deed

deed the history of the building be closely connected with that of the family that inhabits it.

“ The villas, or country houses, of the  
“ Romans,” continues Knight, “ were quite  
“ irregular : adapted to the situations in which  
“ they were placed, and spread out in  
“ every direction, according to the wants or  
“ inclinations, the taste, wealth, or magnifi-  
“ cence, of the respective owners. The re-  
“ gularity of which the moderns have been so  
“ tenacious in the plans of their country houses,  
“ was taken from the sacred, and not from the  
“ domestic architecture of the ancients; from  
“ buildings, the forms of which were prescrib-  
“ ed by the religion to which they were con-  
“ secrated, and which, as far as they were  
“ meant to be ornamental, were intended to  
“ adorn streets, and squares, rather than parks  
“ and gardens; but being the only monuments  
“ of ancient taste and magnificence, in ar-  
“ chitecture, that remained at the resurrection  
“ of the arts, in a state sufficiently entire to be  
“ perfectly understood; the revivers of the  
“ Grecian style copied it servilely from them,  
“ and applied it indiscriminately, to country,  
“ as well as to town, houses: but as they felt  
“ its incongruity, with the surrounding scenery  
“ of

“ of unimproved and unpurverted nature, they  
“ endeavoured to make that conform to it, as  
“ far as it was within their reach or under their  
“ controul. Hence probably arose the Italian  
“ style of gardening, though other causes may  
“ have co-operated.

“ Nearly connected with propriety, or  
“ congruity, is symmetry; or the proportion  
“ of parts to each other, and to the whole.  
“ This also depends entirely on the association  
“ of ideas, and not at all on abstract reason, or  
“ organic sensation; otherwise like harmony  
“ in sound, and colour, it would result equal-  
“ ly from the same comparative relations in all  
“ objects; which is so far from being the case,  
“ that the same relative dimensions which  
“ make one animal beautiful, make another  
“ absolutely ugly; that which is the most ex-  
“ quisite symmetry in a horse, would be the  
“ most gross deformity in an elephant.

“ In many productions of art, symmetry  
“ is still more absolutely the result of arbitrary  
“ convention; that is, it proceeds from an asso-  
“ ciation of ideas, which have not been so  
“ invariably associated; and which are there-  
“ fore less firmly, and intimately connected.  
“ There is no reason whatever in the nature  
“ of things, or in the analogy of the parts,  
“ why



“ why a Corinthian capital should be placed  
“ on a slenderer shaft than a Doric or Ionic  
“ one; on the contrary, the Corinthian being  
“ of the largest, and consequently the heaviest  
“ proportion, would naturally require the co-  
“ lumn of the largest dimensions, proportion-  
“ ed to the height to sustain it.” The author’s  
position here seems to be, that a slender shaft is  
required to a Corinthian capital, merely because  
we are accustomed to such an arrangement. I  
think he might have found a reason in an as-  
sociation, which, whether natural or acquired,  
seems certainly to exist in the human mind be-  
tween slenderness and ornament. Massive  
strength appears incongruous with the delicacy  
of ornament: the ideas excited by the one, are  
those of resistance to opposing causes, which  
would expose to danger any highly wrought  
finishings; the other may have equal strength,  
but it is not so strongly expressed, and there-  
fore does not call to our imaginations the same  
ideas of opposing force.

“ The progress of architecture has uni-  
“ formly been from ponderous solidity to ex-  
“ cessive lightness. The Greeks and Romans  
“ bound themselves by certain rules of propor-  
“ tion, before they had run into the latter ex-

H

“ treme,

“ treme, and therefore never indulged them-  
“ selves in the excessive lightness of the gothic  
“ architects, who recognised no rules, but  
“ worked merely for effect.

“ Though the refinements of accurate  
“ proportion may have contributed to preserve  
“ the elegance and purity of taste, which distin-  
“ guishes the works of the ancients; yet they  
“ certainly tend to restrain genius, and prevent  
“ grandeur of effect, which can only be pro-  
“ duced by contrast, the direct reverse of pro-  
“ portion.

“ In the cathedral of St. Peter's at Rome,  
“ all the ornaments, sculpture, foliage, &c.  
“ are of gigantic size, taken from a scale pro-  
“ portionate to that of the building: and this  
“ rigid adherence to uniform proportion has  
“ been admired as a very high excellence,  
“ though it has been universally allowed that  
“ the effect has been, to make the building ap-  
“ pear much smaller than it really is; and if it  
“ be a merit to make it appear small, it cer-  
“ tainly was extreme folly to incur such  
“ immense expence in building it large.

“ The gothic architects worked upon  
“ principles diametrically opposite, and made  
“ all these parts of as small a proportion as  
“ was

“ was compatible with their being distinctly  
“ seen ; and the ornaments thus appear more  
“ light and elegant, and the very profusion  
“ with which they are scattered, in order to  
“ diffuse them over a large space, still extends  
“ the scale which they afford the eye for the  
“ measurement of the whole.”

I doubt if this doctrine of Mr. Knight be perfectly correct. The size of the ornaments at St. Peters is said to have the effect of diminishing *at first*, the apparent magnitude of the building, but it increases on you as you continue to contemplate it. If this be the case, one might conclude by a parity of reason, that the effect of the gothic style of architecture, arising in fact from a false estimate of the size of the ornaments, would gradually weaken, as the edifice was more attentively considered, and in this point of view the palm of superiority would not be so decidedly given to the gothic. We will now proceed to the further explanation of his system.

“ Dignity of attitude, is that disposition of  
“ the limbs and person, which from habitual  
“ observation of ourselves and others, we have  
“ learned to consider as expressive of a digni-  
“ fied and elevated mind ; while grace and ele-  
H 2 “ gance

“ gance of form are those dispositions and  
“ combinations of it which seem to express  
“ refinement of intellect, polish of manners,  
“ or pleasantness of temper. On this princi-  
“ ple there are no lines that may not be grace-  
“ ful, elegant, and beautiful, in proper situa-  
“ tions and circumstances; and none that are not  
“ the reverse, when applied improperly. This  
“ just application of them, just feeling alone  
“ can determine, for those who have attempted  
“ to regulate it by system, have only set up  
“ system against sentiment, and thus co-operat-  
“ ed with the caprices of novelty and fashion  
“ in diffusing false taste through the world.  
“ The most ingenious way,” says an able au-  
“ thor, “ of becoming foolish is by system, and  
“ the surest method to prevent good sense to  
“ set up something else in the room of it.  
“ Zigzag walks, serpentine canals, spiral co-  
“ lumns, broken or scooped pediments, have  
“ all sprung from this systematic line of beau-  
“ ty; and for some periods triumphed over the  
“ common sense, and common feelings of man-  
“ kind.

“ In architecture, indeed, this system has  
“ been less prevalent than in other arts; which  
“ being less immediately appropriated to the  
“ uses



“ uses of common life, were less under the influence of common sense : for though spiral columns and scooped pediments were for a time in fashion, it was more with painters than architects ; and painters have reasons peculiarly belonging to their own art for preferring them. Undulating walls, and serpentine balustrades, have no where, that I know, been in use ; nor are curved roofs to be seen on this side China, except in imitations introduced into this country, by a person who gave equal proofs of the purity of his taste, when he censured the temples of Athens, and designed those of Kew.

“ Some few attempts have lately been made, to adapt the exterior forms of country houses, to the various character of the surrounding scenery, by spreading them out into irregular masses ; but as our ideas of irregularity in buildings of this kind, have been habitually associated with those of the barbarous structures of the middle ages, a mistaken notion of congruity has induced us to exclude from them every species of ornament, not authorised by the rude, and unskilful monuments of those times : as if that which is at once convenient and ele-

“ gant, needed any authority to justify its  
“ use.

“ In all marked deviations, from the or-  
“ dinary style of the age and country, in  
“ which we live, the great difficulty, is to  
“ avoid the appearance of trick and affecta-  
“ tion, which seem to be in some degree in-  
“ separable from buildings made in imitation of  
“ any obsolete, or unusual style; for, as the  
“ execution, as well as the design, of almost  
“ every age, and country, has a peculiar  
“ character, these imitations are scarcely ever  
“ in perfect harmony and congruity through-  
“ out; but generally proclaim themselves at  
“ first sight to be mere counterfeits, which, how  
“ beautiful soever to the eye, necessarily ex-  
“ cite displeasing ideas in the mind. A house  
“ may be adorned with towers, and battle-  
“ ments, or pinnacles, and flying buttresses;  
“ but it should maintain the character of a  
“ house, of the age and country in which it  
“ is erected, and not pretend to be a fortress,  
“ or monastery, of a remote period, or distant  
“ country; for such false pretensions never  
“ escape detection, and when detected, neces-  
“ sarily excite those sentiments, which ex-  
“ posed imposture never fails to excite. Rus-  
“ tic

“ tic lodges to parks, dressed cottages, pastoral  
“ seats, gates and gateways, made of unhewn  
“ branches, and stems of tress, have all a still  
“ stronger character of affectation ; the rustici-  
“ ty of the first, being that of a clown in a  
“ pantomine ; and the simplicity of the others,  
“ that of a shepherdess in a French opera.

“ The real character of every object of  
“ this kind, must necessarily conform to the  
“ use to which it is appropriated ; and if at-  
“ tempts be made to give it any other character,  
“ it will prove in fact to be only a character of  
“ imposture.”

Knight congratulates himself on the success of an experiment which he made, more than 30 years ago, in building a house ornamented with gothic towers and battlements without, and with Grecian ceilings, columns, and entablatures within ; but, I apprehend, that most of his readers will agree with me, in thinking that he has, in the above passage, justly and severely censured his own practice. He might have made his dwelling as irregular as he pleased externally, without exciting the least idea of its being any thing but a dwelling house of the 18th century : and he might have united Grecian ornaments to great variety of outline, to as beautiful, and I think as picturesque, an object, as any modern

gothic villa can possibly be. The doctrine is most indisputably just, but the author's application of it in his own case appears to have been false.

In the chapter on Judgment, after some excellent observations on the appearance of probability, to be maintained in epic and dramatic fiction, and a comparison between the two, our author proceeds to observe that, "the personages of the epic are not subjected to the evidence of sense like those of the dramatic, and the imagination is therefore at liberty to form what notions of them it pleases; and it belongs to the art of the poet, to aggrandise and embellish those notions, in proportion as he wishes to impress his reader with grand and sublime ideas of the transactions which he relates. For this purpose a style uniformly elevated above that of the common vehicle of social intercourse, is absolutely necessary; and a metrical style is more appropriate than any other, as it can sustain this elevation without being turgid, or transposed, and consequently can descend without being debased, and rise without being inflated. Its ordinary tone is not that of common nature, but of nature elevated to enthusiasm, by supernatural inspiration; " and



“ and it is by speaking in this tone, that the  
“ persons of the epic acquire a supernatural  
“ elevation of character, which the imagina-  
“ tion readily yields to them, because its decep-  
“ tions are never controverted by the evidence  
“ of the senses.

“ This expansion of the imagination, by  
“ a systematic elevation of language, is one of  
“ the most efficacious means of giving poeti-  
“ cal probability, or making supernatural events  
“ appear credible; for, when once we have  
“ conceived supernatural ideas of the charac-  
“ ters, we expect them to perform supernatural  
“ actions. The fictions of the *Iliad* are as ex-  
“ travagant as those of any common romance;  
“ and if we read them in prose we immediate-  
“ ly perceive them to be so; but the enthusiasm  
“ of the poet’s numbers so expands the imagi-  
“ nations of his readers, that they spontaneous-  
“ ly conceive ideas of his characters adequate  
“ to the actions which he makes them per-  
“ form.

“ But even with this magical enthusiasm  
“ of verse, had Achilles been brought into  
“ action at once, and, without our having any  
“ previous acquaintance with him, defeated a  
“ whole Trojan army by the force of his single  
“ arm,

“ arm, we should have turned away in dis-  
“ gust, from so absurd a tale ; but the poet has  
“ opened his character to us by degrees, and  
“ raised it by artful contrasts and allusions  
“ seemingly accidental, scattered through all  
“ the preceding parts of his poem ; every fa-  
“ culty of his mind, too, is upon the same  
“ scale as the strength and agility of his body,  
“ all that he says being distinguished by a glow  
“ of imagination, a fervor of passion, and  
“ energy of reasoning, peculiar to himself.  
“ Even the tender affections of his mind par-  
“ take of its greatness, and its pride : his piety  
“ is reverence, and not fear ; his friendship  
“ gives, but never seeks protection ; his love  
“ imparts favor which it scorns to ask ; and his  
“ grief assumes the character of rage, and ex-  
“ pends itself in menaces, and vows of ven-  
“ geance against those who have caused it.  
“ By an artful concatenation of circumstances,  
“ he is shewn to the reader under the influence  
“ of every passion, by turns, all of which  
“ operate to the same ends, and conspire to  
“ swell his rage, rendered doubly dreadful by  
“ despair, and impending death. In this tem-  
“ per of mind, endowed with more than mortal  
“ strength, and clad in celestial armour, he is  
“ shewn

“ shewn advancing to the fight, like the autumnal star, whose approach taints the air,  
“ and diffuses disease, pestilence, and death.  
“ Such an image prepares the mind for the  
“ events that follow, which thence seem natural consequences, instead of extravagant  
“ fictions.

“ Truth is naturally circumstantial, especially in matters that interest the passions;  
“ for that which has been strongly impressed upon the mind, naturally leaves precise, and  
“ determinate ideas, whence a narration is always rendered more credible, by being  
“ minutely detailed; provided the minute particulars are such as really do happen in similar circumstances with which we are acquainted. Hence we may account for the  
“ extreme exactitude with which the author of the Iliad has described every thing in  
“ which error or inaccuracy might be detected, either by experience or demonstration. The  
“ structure of the human body, the effects of wounds, the symptoms of death, the actions  
“ and manners of wild beasts, the relative situations of cities and countries, are described  
“ with the greatest precision. The hyperboles  
“ are

“ are all in the actions of his gods, and heroes.  
“ There are near twenty descriptions of the  
“ various effects of wind upon water, all different, and all without one fictitious or exaggerated, circumstance; no *fluctus ad sidera tollit*, or *imo consurgit ad æthera fundo*, but  
“ the common occurrences of nature, raised  
“ into sublimity by being selected with taste,  
“ and expressed with energy.”

I could not refuse myself the pleasure of transcribing the preceding observations: we will now return to objects more closely connected with the purpose of this essay.

“ We have learned by habitual association (in this part I shall rather give an abstract of the author’s sense than copy his words) that certain forms of the limbs and body are adapted to great exertions; and certain forms of the features to great expression, or the expression of great character, and lofty sentiment. It was by observing and selecting these, and even carrying them beyond what is found in ordinary nature, while each succeeding attempt excelled in force or harmony what had preceded it, that the artists of the fine ages of Greece attained such unrivalled excellence in  
the



the representations of their gods, and heroes; and not by copying any preconceived lines of grace and beauty.

“ As all the effect of forms, in imitative  
“ art, is thus owing to that which they signify  
“ or express, truth is the principle, and foundation of all their power in affecting the  
“ mind; for, in these cases, expression that is  
“ not true, ceases to be expression. If large  
“ muscles, limbs, and features, and a vast  
“ outline of body, do not imply a capacity for  
“ great exertions, but appear heavy, torpid,  
“ unwieldy, or disjointed, they are only great  
“ in size, but void of all grandeur of character. Even if they are drawn with so much  
“ skill and science, as to express fully and  
“ correctly this capacity, but are put into action in constrained or studied modes or postures, or in such as the natural impulse of  
“ the occasion would not spontaneously excite,  
“ the expression becomes necessarily false, and  
“ affected, and consequently awakens no sympathy. We may indeed admire the skill  
“ and ingenuity of the artist, and feel surprised  
“ at the novelty and singularity of his inventions; but both our admiration, and surprise,  
“ will be of that kind which is caused by the  
“ distortions

“ distortions of a tumbler, or the tricks of a  
“ mountebank.”

The chapter on Judgment, from which several of the last extracts have been made, is one of the best in the work. I shall make but few from the third part, which treats of the passions; not because there are not a great many excellent observations, but because they relate but little to architecture, or to any art allied to architecture.

“ All sublime feelings,” says our author,  
“ are feelings of exultation and expansion of  
“ the mind, tending to rapture and enthuse-  
“ siasm; and whether they be excited by sym-  
“ pathy with external objects, or arise from the  
“ internal operations of the mind, they are  
“ still of the same nature. In grasping at in-  
“ finity the mind exercises its powers of multi-  
“ plying without end; and in so doing it ex-  
“ pands, and exalts itself, by which means its  
“ feelings and sentiments become sublime.

“ The same effects result from contempla-  
“ ting all vast and immense objects; such as  
“ spacious plains, lakes or forests, high moun-  
“ tains, mighty ruins, and unbounded seas.

“ Upon a similar principle, all works of  
“ great labour, and expence, are sublime;  
“ such

‘ such as the wall of China, the colonades of  
“ Palmyra, the pyramids of Egypt, or the  
“ aqueducts of Rome; for, in contemplating  
“ them, the mind applies the ideas of the  
“ greatness of exertion, necessary to produce  
“ the works, to the works themselves. Great  
“ wealth too, is so nearly allied to great power,  
“ that the contemplation of its splendour ex-  
“alts and expands the imagination. Phidias’s  
“ colossal statue of Jupiter, of ivory and gold,  
“ might have been equally well executed in  
“ plaster gilt; but its effects upon the specta-  
“tors would have been very different.”

Knight does not seem to have been so successful in pointing out the sources of pleasure, in the inanimate world, as where he can shew our sympathy to be strongly engaged by any display of bodily or mental energy. In the shows of gladiators, or combats of wild beasts, the exhibition of courage and address, of spirit and fortitude, may excite the warmest admiration, and be a source of high enjoyment, to those whose feelings are not too strongly interested by the appearances of suffering. By selecting the sentiments, and actions, corresponding to such qualities, epic, and dramatic poetry, painting, and sculpture, are enabled

“ to

to raise those emotions within us, which are justly considered as the effects of the sublime. All this is clear and rational, but his explanation of the mere physical sublime is not equally satisfactory. The effect of a building is by no means in proportion to the appearance of labour and expence bestowed upon it. If the most exquisitely wrought ornaments do not add to the *beauty* of a building they had better be omitted; they will not certainly increase the feelings of sublimity.

“ It might naturally have been supposed,” observes Knight, in his concluding chapter, “ when standards of excellence were universally acknowledged and admired in every art, that the style and manner, at least, of these standards would be universally followed, and that the wit and ingenuity of man would only be employed in adding the utmost refinements of execution, to that which admitted of no improvements from invention. But this is by no means the case: perfection in taste and style has been no sooner reached than it has been abandoned, even by those, who not only professed the warmest, but felt the sincerest admiration for the models which they forsook; the taste for pure  
“ design



“ design in Italy, arose and perished with  
“ Raphael, whose immediate scholars and suc-  
“ cessors, deviated into extravagance and dis-  
“ tortion.

“ Though the passion for novelty has been  
“ the principal means of corrupting taste, it  
“ has also been a principal mean of polishing,  
“ and perfecting it : for imitation being in it-  
“ self pleasing, men are always delighted with  
“ the best specimens they have seen of it, be  
“ they ever so bad ; and it is merely the desire  
“ of something new, and not any pre-conceiv-  
“ ed ideas of something better, that urges them  
“ on to seek for improvement. As long as  
“ this restless desire of novelty can restrain itself  
“ in imitative art, to the imitation of real,  
“ genuine, nature ; it will only tend to real  
“ improvement, and limit its gratifications to  
“ varieties of perfection, and degrees of re-  
“ finement : but when it calls upon invention,  
“ to usurp the place of imitation, or substitute to  
“ genuine or merely embellished nature, na-  
“ ture sophisticated, and corrupted by artificial  
“ habits, it immediately produces vice, and  
“ extravagance of manner. Of the first, Mi-  
“ chael Angelo was a memorable instance ; and  
“ of the second, Bernini ; both of whom were  
I “ men

“ men of extraordinary genius and talents;  
“ but stimulated into manner, and extravagance  
“ of opposite kinds by an insatiate desire of novelty and originality.

“ In no act has the passion for novelty  
“ had more influence, than in that of landscape  
“ gardening or embellishing and improving  
“ grounds. Whenever this art has been practised in countries only partially and imperfectly cultivated, as in the ancient Persian  
“ and Roman empires, and in the modern states  
“ of Europe till very lately; it always appeared to delight in a profuse display of labour,  
“ and expence; and in deviating as much as  
“ possible, from ordinary nature. In the vast  
“ and populous empire of China, on the contrary, where every spot capable of producing food is cultivated to the utmost extent of  
“ art and industry, the gardens of luxury,  
“ and grounds devoted entirely to amusement,  
“ are affectedly diversified with artificial rocks,  
“ irregular lakes, and ponds, and other imitations of the wild varieties of uncultivated nature; for there such objects are rare and novel,  
“ and consequently the possessing them displays wealth and magnificence.

“ Were we doomed to spend our lives  
“ with

“ with one set of unchanging objects, which  
“ could afford no new varieties either of sen-  
“ sations, images, or ideas; nor produce any  
“ new modifications, or dispositions, in those  
“ previously felt and acquired; all around us  
“ would soon have the tiresome sameness of the  
“ walls of a cell. If to this were added the  
“ prescience of every event that was to happen  
“ to us through life; so as to extinguish hope  
“ and expectation, and every feeling of sus-  
“ pence, or pleasure of novelty, it would be  
“ scarce possible for any gratifications that re-  
“ mained to render existence endurable.

“ Man as he now is, is formed for the  
“ world as it now is; in which *‘ he never is*  
“ *‘ but always to be blest,’* that is, his real happi-  
“ ness consists in the *means*, not in the *end*.  
“ The source and principle of it therefore is  
“ *novelty.*”

It seems to me rather inconsistent that Knight after having said so much against Michael Angelo, and others in different arts, whom he considers as the corrupters of purity of design and expression, for their love of originality, and eager search after novelty, to conclude at last, that novelty is the real principle of happiness. The proofs on this head, are also

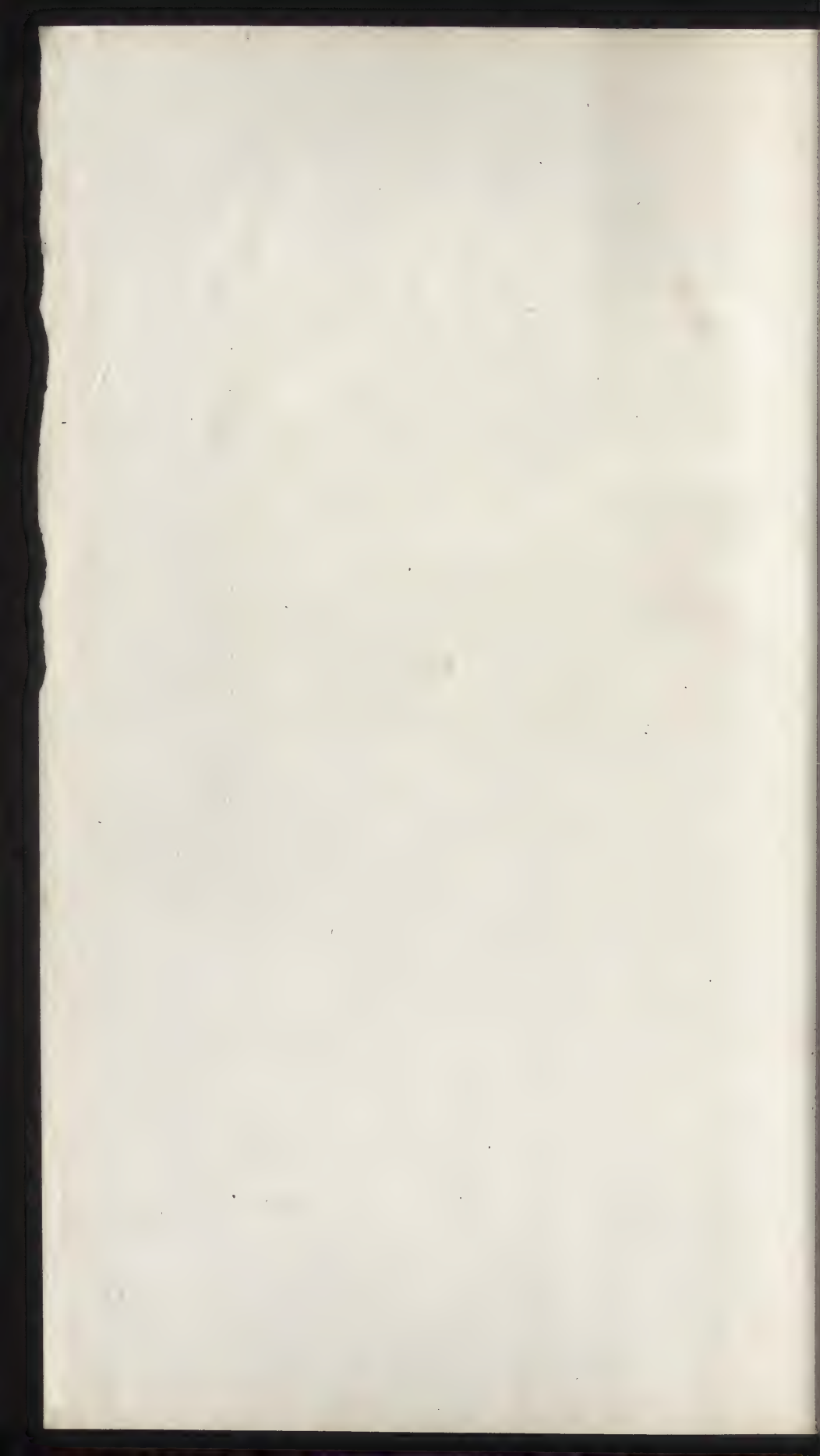


very deficient; there is a calm enjoyment of ourselves, of our feelings, and of our friends, which is very different from that restless desire of what is new, which Mr. Knight seems to consider as the sole source of enjoyment. The examples too by which he arrives at this conclusion do not carry conviction. In all of them, what he attributes to the love of novelty, may be reasonably attributed to the desire of distinction; and if it should be asked how it happens that novelty should excite admiration so as to be the means of distinction, it may be answered that it exhibits invention, or something like invention, an exertion of the human mind, the contemplation of which, according to the principles so well explained by Knight, would necessarily excite admiration. It is true an extremely slight deviation, the smallest possible improvement on models of acknowledged excellence, would exhibit more of that power to a person capable of feeling and comprehending it, but the multitude would observe only the similarity and pass over the difference, and few people, however they may pretend to it, are careless of the voice of the multitude. Hence it follows that the rank that any nation will attain in works of art will depend in great measure



measure on the correctness of observation in matters of taste among the people.

I am so far from agreeing with Mr. Knight in thinking novelty the only principle of happiness, that I can hardly think mere novelty a source of pleasure: though I will readily acknowledge that it greatly enhances other pleasures. The principle which marks the progress of the fine arts both in improvement and decay, is the *love of distinction*, which will operate in their favour as long as the public is capable of appreciating real improvements, but the contrary when these improvements become so minute as no longer to excite general attention.



ESSAY  
ON  
BRIDGE BUILDING.

By JAMES SAVAGE.

*Read Feb. 22, 1808, and March 3, 1809.*

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THE many popular prejudices respecting bridge building and more particularly on the principles of arches; the absurd observations that are frequently made by illiterate practical builders; and the ill-founded opinions that are entertained by other persons who assume a higher character, and the ridiculous arguments advanced in support of those opinions, are, I hope, a sufficient apology for an attempt, though a humble one, to produce a popular essay on the subject.

The analytic and algebraic calculations are understood by few, ridiculed by many, and can scarcely be expected to be brought into general use. And although to these we must eventually refer for positive accuracy, yet even

these have sometimes *justly* suffered disrepute for giving decisions on imperfect data, and stamping with their *fiat* of approbation, projects, conceived without due attention to the many other requisites which practical experience alone can furnish.

These *theories* imposing by their scientific appearance, and shrouded in endless equations, have sometimes been adopted from an incapacity to disprove them, and being imperfectly comprehended to result in practice, has not always corresponded with the anticipations of the theory.

The despisers of mathematical science (equally precipitate in drawing general conclusions from partial instances) have hence taken occasion to argue the inefficacy of the mathematics in affording data on which to calculate the solidity of buildings.

Hence it appears that a very desirable service would be rendered to the science in general, if the nature, intention, use, and application of the several mathematical propositions which are scattered in various authors, were collected, stated, examined and compared with each other; and their results compared with, and corrected by, facts and practical experience.

Such



Such was the task the writer of this paper originally proposed to himself, without reflecting how little he possessed of the leisure or abilities requisite to perform so arduous a task with success. He therefore, requests the indulgence of the society for the imperfect manner in which he has at present treated the subject. Yet he still indulges the intention of *attempting*, as leisure may serve, the completion of his original plan.

In arranging the few observations here submitted to the consideration of the society, by whose criticisms and further communications, I hope to profit, that arrangement is adopted which appears most obvious, though it may probably not be the most scientific, *viz.* to consider the several parts of the subject as they arise in the practice of bridge building.

I purpose hereafter to enter more fully into a comparison of the merits of timber, cast iron, brick and stone bridges, and for the present shall merely remark that in some particular instances where cheapness is desired more than beauty or durability, wood may be chosen: the same reason is sufficient for using brick instead of stone; particularly in bridges upon a small scale. In some peculiar soils, also there may be sufficient reason to prefer a  
timber

timber bridge as the expense of foundations, requisite for one of stone or brick, may amount to a prohibition, whereas the soil for a timber bridge will make comparatively, but little difference of expense. Concerning those of cast iron I confess I entertain for them a considerable dislike, and except under very particular circumstances, and then upon a small scale, I think they should never be adopted. The black, bald, naked skeleton they present to my eye, is the reverse of beautiful: they appear fragile; and in fact are hazardous and insecure. But passing by these for the present I shall confine myself, more immediately, to the consideration of brick or stone bridges.

One of the first things to be considered is the place for the bridge, or that particular situation which will contain a maximum of advantages over the disadvantages.

\* “ In agitating this most important question, every circumstance, certain and probable attending or likely to attend the bridge, should be separately, minutely, and impartially stated and examined; and the advantage

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\* Dr. Hatton.

“ tage or disadvantage of it rated at a value  
“ proportioned to it; then the difference be-  
“ tween the whole advantages and disadvan-  
“ tages will be the net value of that particular  
“ situation for which the calculation is made.  
“ And by doing the same for any other situa-  
“ tions, all their net values will be found, and  
“ of consequence the most preferable situation  
“ among them. In this estimation, a great  
“ number of particulars must be included; and  
“ nothing omitted that can be found to make a  
“ part of the consideration. Among these,  
“ the situation of the town or place, for the  
“ convenience of which the bridge is chiefly  
“ to be made, will naturally produce a particu-  
“ lar of the first consequence: and a great  
“ many others ought to be sacrificed to it. If  
“ possible, the bridge should be placed where  
“ there can conveniently be opened and made  
“ passages or streets from the ends of it in every  
“ direction, and especially one as nearly in the  
“ direction of the bridge itself as possible,  
“ tending towards the body of the town, with-  
“ out narrows, or crooked windings, and easily  
“ communicating with the chief streets,  
“ thoroughfares, &c. And here every person,  
“ in judging of this, should divest himself of  
“ all



“ all partial regards or attachments whatever ;  
“ think and determine for the good of the  
“ whole only, and for posterity as well as the  
“ present.”

A good specimen of the mode of comparing the merits of different situations may be seen in Smeaton's report on rebuilding Glasgow bridge.

An important particular, not mentioned above, is to commit as little violation on private and existing property as possible. In choosing a new site for rebuilding a bridge you change the *High Street*. Establishing a *new High Street* is a work of time ; but the depreciation, I had almost said the annihilation, of the property in the *old*, is instantaneous, and not only the original High Street but all the leading and cross streets and avenues are affected to an extent not always easily appreciated. The modern practice is to give an *ad valorem* compensation for the deterioration sustained ; but this practice has its inconveniences ; and the immense damages frequently awarded must tend to repress the spirit for public improvements.

The banks or declivities towards the river are also of particular concern, as they affect the conveniency of the passage to and from  
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the bridge, or determine the height of it. The breadth of the river, the navigation upon it, and the quantity of water to be passed, or the velocity and depth of the stream, form also considerations of great moment: as they determine the bridge to be higher or lower, longer or shorter. However, in most cases, a wide part of the river ought rather to be chosen than a narrow one, especially if it is subject to great tides or floods; for, the increased velocity of the stream in the narrow part, being augmented by the farther contraction of the breadth by the piers of the bridge, will both incommode the navigation through the arches, and tend to undermine the piers and endanger the whole structure.

The quality of the bed of the river is also of great concern, it having a great influence on the expense; as upon it, the depth and velocity of the stream, depend the manner of laying the foundations, and building the piers. There may sometimes be objections to choosing a *wide part* of the river. The water is *there* the shallowest, by diminishing the width you deepen it; and if the bed is a thin stratum of hard substance, you run the hazard of having insecure foundations; and it appears to have been

Smeaton's

Smeaton's opinion that something of this sort occasioned the destruction of the bridge at Hexham, built by that celebrated character. On the other hand, if the bed of the river is of a good texture the navigation is certainly improved by equalizing the depth of the channel: however in bridges which are well proportioned, the increased velocity of the stream will be but trifling, and therefore no ill effect need be expected therefrom: and the failure of the bridge at Hexham may be more reasonably attributed to the shallowness of its foundations.

The bridge should at all times, if possible, be at right angles to the stream because thereby the piers present the least obstacle or smallest face to the current and have the benefit of their whole mass in opposing (or supporting the bridge against) the current. The convenient navigation of the river also demands the same arrangement. For similar reasons, Alberti recommends to be avoided principally all elbows, because then the stream crosses the river obliquely, and objects floating on the river will not clear the bridge but strike against the flanks of the piers. In tide rivers the ebb channel and the flood channel are usually different: this evidently results from the angles of the  
different

different reaches or elbows in the river; the bridge should be so placed as to suit both with the greatest advantage. In some cases, it is possible, it may be expedient to imitate the bridge at Rimini. The piers are there parallel with the stream though the bridge is *not* at right angles thereto. Had it been otherwise, the road over the bridge must have made an awkward twist with the line of the street, or the piers must have presented their flanks to the stream; either of which would have been a greater defect than the method adopted.

The next consideration is the top line of the bridge or road over it.—This will be determined by the height of the banks or their declivities towards the river, the height of the water, and the height required for the passage of the craft that navigate upon it. The arches should be so high as that they may easily transmit the water at its greatest height either from tides or floods; and also at all times afford an easy passage for vessels. At the same time the disposition above should be such as to render the *passage over it convenient*. It is the latter purpose alone for which the bridge is built; and the only question is how to effect this with the least possible injury to the navigation of the river. If possible, in other respects, a level line at  
top



top is most convenient for the road way. It is said also to possess considerable advantages in point of economy in the use of centering. But this is perhaps not exactly correct, for instance, suppose that to Blackfriars or Westminster bridges the arches had been all of the size and height of the centre, the expense would, doubtless, have been very much increased; and the navigation, to be equally convenient, would not permit them to be lower.

As to the preference in point of beauty, opinions differ; I prefer the straight line as most simple, forming the best contrast with the curve of the arches and generally harmonising best with the surrounding scenery whether of a city or of a country; at least where the banks are elevated: but the French practice of making their bridges straight at top, and then getting up to the extremities of them by inclined planes, has an awkward appearance: in an open flat country the bridge seems built more for shew than use. The top line may, therefore, generally be determined by taking the *lowest allowable height* that will do for the navigation, and forming the road in the best line to suit it. In some cases, as of many country bridges crossing a river in a valley, it is desirable to keep the bridge as high as possible; here it is a good thing



thing to elevate it even at the expense of extending a causeway at each end. By this, the road will be mended and the bridge exhibited to much greater advantage.

The next thing to be determined is the springing line of the arches. Alberti recommends that the crowns of all the arches should stand quite clear above the water. It appears from the context, by the crown he means the whole of the arch. The French practice is to spring them at the height of the highest tides and greatest floods, thereby allowing the greatest possible water-way for the floods. This is not generally approved of by English architects; the consequent flatness of the arches increases the lateral pressure, and bridges thus constructed are dependent wholly on their land-buttments; or rather, the whole depends on every particular part, for if one arch or pier should fail, the whole must follow.—The expense is also increased and the beauty impaired, as the abrupt angle made by the segment of the arch with the perpendicular of the pier is offensive to the eye: on the contrary, the curve of a semi-circle or semi-ellipsis, losing itself in the line of the pier is pleasing and graceful.

When it is considered that the weight of

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water

water depends on the height of the column, a small diminution of the water-way upon the upper surface only, will not appear so material as to sacrifice the serious advantages that are obtained by a lower springing.

Having determined the line of road over the bridge and the level of springing the arches, two or three sketches will readily shew the best number of arches into which to divide the length, so as to obtain the requisite strength with the least possible quantity of materials. If too few or too many in number, you will not only get an excess of materials, but also obstruct the navigation. If too many, by the number of piers; and if too few, by the thickness of the crown descending on the passage way underneath.

The number of arches, all authors agree, should be odd. Practitioners frequently offend against this rule. Alberti says, an odd number is always the most pleasing, and that the work is thereby stronger. I know of no motive sufficient for making the number of arches equal, unless the stream should have a double channel; and even that circumstance might probably be as well accommodated by an odd number. A good example of determining the number  
ber

ber of arches from complicated considerations is exhibited in the Pont Neuf at Paris, crossing two arms of the Seine.

Dr. Hutton says, “ in fixing on the number of arches, let an odd number always be taken, and few and large ones, rather than many and smaller, if convenient: for thus we shall have not only fewer foundations and piers to make, but fewer arches and centres, which will produce great savings in the expense, and besides, the arches themselves will also require much less materials and workmanship, and allow of more and better passage for the water and craft through them; and will appear at the same time more noble and beautiful.”

The nature of the bed for the foundations and the materials to be used will require to be adverted to. Should the foundation be a *thin stratum* only of hard substance, it might be advisable to make the arches more numerous, thereby lighter, and requiring less foundation; and the Doctor is mistaken respecting the expense, for it is found that the latter mode will generally be the cheapest. If the top of the bridge be a straight horizontal line, the arches may be made all of a size; if it be a little

lower at the ends than the middle, the arches must proportionally decrease from the middle towards the ends; but if higher at the ends than the middle, they may then increase towards the ends. The latter case can seldom or ever occur, and need not in any case be adopted; it would certainly be very ugly.

We next have to consider the form of the arch.

Alberti, Palladio, and other architects, recommend exclusively the circular, either semi or a segment not much less. Some more modern authors also plead the authority of the ancients for excluding ellipses and other curves; but it is most probable, the ancients were ignorant of the merit of other curves, and perhaps even of the mode of constructing them; their authority on this subject is therefore worth little. Palladio (in reference to the lateral pressure) says semis are stronger because they rest entirely on the piers, and never press upon each other. He further directs that as you diminish the rise of the segment you must increase the foundation upon the banks. It is a vulgar argument frequently made use of by some who call themselves architects, that because the joints of a circular arch all tend to the

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the same *centre* it must therefore be stronger. This argument is confidently given as conclusive on the subject by Stephen Riou, in his pamphlet published about the time of building Blackfriars bridge.

The ease with which the lines of a circular arch are drawn may make many persons *hastily* adopt them rather than give themselves the trouble of delineating the other curves. Upon this head I shall again quote Dr. Hutton: —“ As the choice of the arch is of so great  
“ moment, let no person either through igno-  
“ rance or indolence prefer a worse arch be-  
“ cause it may seem to him easier to construct;  
“ for he would very ill deserve the name or  
“ employment of an architect, who is not ca-  
“ pable of rendering the exact construction of  
“ these curves easy and familiar to himself;  
“ but if by chance a bridge-builder should be  
“ employed who is incapable of doing that, he  
“ ought at least to be endowed with such a  
“ share of honesty, as to procure some person  
“ to go through the calculations which he can-  
“ not make for himself.”

And yet the French architects who are by no means deficient in mathematical knowledge, instead of the correct ellipsis use an oval form-

ed by segments of different circles, for the purpose of tracing the arch joints with greater ease.

In comparing the merits of the several forms we must consider them with reference to the end we wish to obtain. This will generally be a road level, or nearly so, supported by an arch leaving the greatest void under it. And as the bridge when built is not merely to support itself but to sustain heavy weights passing over it and pressing partially, the rattling of carriages, &c. it therefore requires solidity. With due consideration to these requisites, it will be desirable to reduce as much as possible the quantity of materials, labor, and consequent expense. The way to do this will be by knowing how we may best apply the materials we have, so as to obtain from them their greatest strength for practical purposes.

To pursue this inquiry systematically we must consider the nature of an arch, and the principles upon which depend its stability and permanence.

An arch is formed by the apposition of courses of materials of a wedge like form, and if worked truly, and pressed proportionally, it cannot fail unless the pressure be so great as to  
crush

crush the materials. It will easily be conceived that some proportion must be maintained between the different parts of an arch and the loading thereupon. Suppose the butments to be immoveable, if you add weight on the haunches you will raise the crown; if on the crown you will force out the haunches; and this alteration of form produced by a disproportionate load upon any part will still more increase the disposition to change; as the alteration produces a form still less adapted to support that extra weight. The whole must therefore fall into ruin.

The History of Pont y Pridd, a bridge over the Taafe, near Lantrissent in Glamorganshire, illustrates well the necessity of attending to the equilibration of the parts of an arch. In Malkin's Tour through South Wales, it is described as the work of " William Edwards, " an uneducated mason of the country, who " was only indebted for his skill to his own industry and the power of his genius. He " had engaged in 1746, to build a new bridge " at this place, which he executed in a style " superior to any thing of the kind in this or " any other part of Wales, for neatness of workmanship and elegance of design. It consisted

“sisted of three arches elegantly light in their  
“construction. The hewn stones were excel-  
“lently well dressed and closely jointed. It  
“was admired by all who saw it. But the  
“river runs through a very deep valley that is  
“more than usually woody, and crowded  
“about with mountains. It is also to be con-  
“sidered that many other rivers of no mean  
“capacity, as the Crue, the Bargoed Taafe,  
“and the Cunno, besides almost numberless  
“brooks that run through long deep and well  
“wooded vales or glens fall into the Taafe, in  
“its progress. The descents into these vales  
“from the mountains being in general very  
“steep, the water in long and heavy rains  
“collects into these rivers with rapidity and  
“force, raising floods that in their description,  
“would appear absolutely incredible to the in-  
“habitants of open and flat countries, where the  
“rivers are neither precipitate in their courses  
“nor have such hills on each side to swell them  
“with their torrents. Such a flood unfortunately  
“occurred after the completion of this un-  
“dertaking, which tore up the largest trees by  
“the roots and carried them down the river  
“to the bridge where the arches were not  
“sufficiently wide to admit of their passage.  
“Here



“ Here therefore they were detained. Brush-  
“ wood, weeds, hay, straw, and whatever lay  
“ in the way of the flood, came down and  
“ collected about the branches of the trees  
“ that stuck fast in the arches and choaked the  
“ free current of the water. In consequence  
“ of this obstruction to the flood, a thick and  
“ strong dam, as it were, was thus formed.  
“ The aggregate of so many collected streams  
“ being unable to get any further, rose here to  
“ a prodigious height, and, with the force of its  
“ pressure carried the bridge entirely away  
“ before it. William Edwards had given se-  
“ curity for the stability of the bridge during  
“ the space of seven years ; of course he was  
“ obliged to erect another, and he proceeded  
“ on his duty with all possible speed. The  
“ bridge had only stood for about two years  
“ and a half. The second bridge was of one  
“ arch for the purpose of admitting freely  
“ under it whatever incumbrances the flood  
“ might bring down. The span or chord of  
“ this arch was 140 feet, its altitude 35 feet,  
“ the segment of a circle whose diameter was  
“ 178 feet. The arch was finished, but the para-  
“ pets not yet erected, when such was the pres-  
“ sure of the unavoidably ponderous work  
“ over

“ over the haunches, that it sprang in the mid-  
“ dle, and the key stones were forced out.  
“ This was a severe blow to a man who had  
“ hitherto met with nothing but misfortune in  
“ an enterprize which was to establish or  
“ ruin him in his profession. William Ed-  
“ wards, however, possessed a courage which  
“ did not easily forsake him: he engaged in it  
“ a third time, and by means of cylindrical  
“ holes through the haunches, so reduced their  
“ weight that there was no longer any danger  
“ from it. The second bridge fell in 1751;  
“ the third, which has stood ever since, was  
“ compleated in 1755. (See Fig. 5.)—In each  
“ haunch are three cylindrical openings run-  
“ ning through from side to side. The width of  
“ the bridge is about 11 feet. To strengthen it  
“ horizontally, it is made widest at the abut-  
“ ments, from which it contracts toward the  
“ centre by seven offsets, so that the road way is  
“ 1 foot 9 inches wider at the extremities than  
“ at the middle.”

The destruction of the second bridge evidently arose from the weight at the crown not being sufficient in proportion to the weight upon the haunches. That the *due proportion* was sufficiently approximated, by introducing the lightening circles, is proved by the stability of  
of

of the bridge, for now more than half a century.

This part of the subject has received the attention of many professed and eminent mathematicians and great light has been thrown on it by their labours. Mathematicians assert, and the opinion has been generally received, that the best arrangement is that of the equilibration of the materials; and *this* they consider as eminently, if not exclusively, the principle upon which depend the stability and permanence of an arch. The two latest writers on the subject, and from whom we may therefore expect to derive the greatest assistance, are, Dr. Hutton and Mr. Atwood.

For the complete view of their theorems, I must refer to their works: they establish their first propositions upon such simple principles and deduce their results so clearly step by step, that there can be no doubt of the correctness of the results. Any one who will give their works a patient attention will be satisfied this is the fact. But in order that we may avail ourselves properly of the benefit of their labours, we must consider their *data*, or the way in which they look at the subject, and then we shall be able duly to appreciate their results.

Mr. Atwood considers the subject on the  
principle

principle of the wedge ; and the voussoirs as a series of wedges acting on each other by their weights and angles.

Dr. Hutton in his first proposition considers the arch as a series of lines or bars, connected at their angles, where they are allowed to revolve as if hinged. Certain weights appended at their joints will induce certain angles, and keep or preserve those angles as they are, or in equilibrio. We have here, in pursuing the theorem, the means of forming the extrados or intrados having one given to find the other ; so that the whole may be in equilibrio. This theorem may be further illustrated by supposing a flexible flat bar so thin as to be a mere line bent in the form of an arch, and the ends turned up in a direction perpendicular to the horizon, and secured in that vertical position. (See Fig. 1 and 2.) Imagine that line to be loaded as there drawn, the bar forming the line of the arch (or intrados of the whole mass) will then have no disposition to change its form. That load may be supposed to be formed by indefinitely thin bars placed side by side, vertically, or grains of sand capable of moving every way.

It is easy to suppose that if the weight is considerably diminished on the crown, that part  
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of the bar will rise; if greatly increased there, it would be depressed and the haunches proportionately rise. The theorem for constructing that line of loading or extrados is marked on the paper with the figure. We find that in an arch whose curve ends in a perpendicular direction the load required over that part is infinite. According to this theorem therefore it should follow that we could not build a semi-circular or semi-elliptical arch, for it is very evident we shall never be able to apply that infinite load over the springing.

In this theory of Dr. Hutton's we see no attention paid to the circumstance of thickness in the arch (or the extrados of the voussoirs), but the extrados is considered as the top line of the loading over the arch, and the arch itself considered, vertically, as a mere line, and the incumbent loading perpendicular columns, or rather planes. This appears to me to be an important deviation from the nature of a brick or stone arch. It may perhaps be applied with propriety to an iron bridge, which may be well considered as a structure of lines, and not of solids.

By way of further discussing the merits of these two theorems I shall submit some remarks on the article *bridge* in Dr. Rees's new Cyclopædia. Considering the extensive circulation

lation of this work, its well founded general reputation, the talents of its editor and contributors, it becomes the more important to examine carefully what is likely to have such extended influence.

On the theory of bridges, the Cyclopædia says:—" It will be seen by referring to the  
 " article Arch in this Dictionary, that we have  
 " adopted the opinion of those mathematicians  
 " who conceive that an arch is kept in equilibrium (or from falling) by the weight or vertical pressure of the superincumbent wall or mass. The principles on which they proceed have now obtained the name of *the theory of equilibration*.

" It will be readily admitted by those who  
 " attend to these subjects, that whatever properties may be shewn to relate to a geometrical or lineal arch considered without thickness, and of its superincumbent plane, may be easily and safely transformed to a real arch of solid materials, and the heavy matter sustained by it: for it is manifest, that a solid arch may be conceived to be generated by the motion of a linear arch, and its plane in a direction perpendicular to that plane, or to be made up of an indefinite number of such equal linear arches and corresponding  
 " ing

“ ing planes; and in either case what is shewn  
“ to obtain with respect to the former, may  
“ without hesitation be applied to the latter.<sup>(a)</sup>  
“ This the reader will keep in mind.

“ The first hint of a principle which we  
“ recollect, is contained in Dr. Hook's assertion;  
“ that the figure into which a chain or rope  
“ perfectly flexible will arrange itself when  
“ suspended from two hooks, is, when inverted,  
“ the proper form for an arch composed of  
“ stones of uniform weight. The reason as-  
“ signed for this principle is, that when the  
“ flexible festoon of heavy bodies becomes in-  
“ verted, still touching one another in the same  
“ points, the force with which they press on  
“ each other in the last case, is equal and oppo-  
“ site to the forces with which they draw each  
“ other in the case of suspension. The curve  
“ formed by a rope or flexible chain of ex-  
“ tremely small links when thus suspended, is  
“ well known to our geometricians by the  
“ name of the catenarian curve; by the French  
“ it is called *la chainette*. If a curve of this  
“ kind be disposed in such a manner that its  
“ vertex shall be uppermost, and if a multi-  
“ tude of globes be so arranged that their  
“ centres

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(a) For this and the following references see the text, 151, and following pages.

“ centres shall be in the circumference of this  
“ curve, they will all remain motionless and in  
“ equilibrium: much more will this equili-  
“ brium subsist if, instead of globes, we sub-  
“ stitute thin voussoirs, having flat sides, which  
“ touch each other in directions perpendicular  
“ to the curve. In the former case, the equili-  
“ brium will be destroyed very easily, just as a  
“ globe resting on a plane surface is easily put  
“ in motion; in the latter, the equilibrium can-  
“ not be destroyed without considerable force;  
“ just as when a heavy body is placed upright on  
“ a broad flat base, it will not only stand, but  
“ will require considerable force to push it over.

“ Since the catenarian curve is readily  
“ described mechanically, it is no wonder that  
“ this principle of Dr. Hook's should be very  
“ generally received; but many of those who  
“ adopted it forgot that it could not be exten-  
“ sively applied without certain modifications.  
“ (These modifications it will be seen further  
“ on, cause this principle to coincide exactly  
“ with the true theory of equilibration.) As  
“ to the contrary it is manifest from what we  
“ have already said that it is only the form of  
“ a very slender arch rib of uniform thickness,  
“ and unfit for the purpose of a bridge; <sup>(b)</sup> which  
“ requires a considerable mass of masonry to  
“ lay



“ lay upon the arch and fill up the space to the  
“ road-way, thus completely destroying the  
“ equilibrium at first established in the arch  
“ itself.<sup>(b)</sup>

“ It would be possible indeed to construct  
“ a catenarian curve of equilibration having a  
“ horizontal line for the extrados, but then  
“ the thickness of the mass above the crown  
“ of the arch must be enormous: thus for a  
“ catenaria of 100 feet in span, and 40 feet  
“ high, the distance from the top of the arch to  
“ the horizontal extrados must have been near-  
“ ly 37 feet to insure an equilibrium.<sup>(c)</sup> For  
“ these reasons the catenarian curve has been  
“ very seldom used in the erection of bridges.

“ Another principle which was first as-  
“ sumed about the end of the seventeenth cen-  
“ tury, is, that every perpendicular column of  
“ masonry above the arch is merely kept from  
“ sliding down the arch by the next adjoining  
“ column.

“ It is very obvious at first sight that this  
“ principle is not consistent with nature; it has  
“ therefore found but few advocates.<sup>(d)</sup> When  
“ analytical expressions are deduced from the  
“ curvature of arches constructed on this prin-  
“ ciple, it is worth observing, that they coin-

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“ cide

“ cide exactly with those which would flow  
“ from the supposition that the arch was in  
“ equilibrio, in consequence of having a fluid  
“ with an horizontal surface pressing upon every  
“ part of it.

“ A third principle is drawn from the con-  
“ sideration of the arch stones being frustrums,  
“ or parts of wedges. This principle, we believe,  
“ originated in France, and has been present-  
“ ed in various forms by De la Hire, Belidor,  
“ Varignon, Parent, and other French philoso-  
“ phers, and lately by our ingenious country-  
“ man Mr. Atwood. In the method now  
“ alluded to, it is considered what weight, in  
“ or upon a wedge, is balanced by forces acting  
“ against the sides; or what force such a wedge  
“ exerts both horizontally and perpendicularly  
“ to its sides: and thence it is computed what  
“ must be the position and shape of the conti-  
“ guous wedges of given weights; or what  
“ must be their weights to a given shape and  
“ position, so as just to exert the adequate de-  
“ gree of resistance required by the first wedge;  
“ and so on, from wedge to wedge, till the  
“ whole is balanced.

“ A mere arch <sup>(c)</sup> constructed in this way,  
“ would remain in equilibrio as long as the  
“ constituent

“ constituent voussoirs had liberty to slide,  
“ without friction, down the respective inclined  
“ planes on which they lay.<sup>(7)</sup>

“ This method is, indeed, liable to many  
“ objections. First, this theory requires that  
“ either the density or the magnitude of the  
“ respective voussoirs, from the crown to the  
“ foot of the arch, should keep constantly in-  
“ creasing in proportion to the differences of  
“ the tangents of the several angles, which the  
“ joints of the voussoirs make with the vertical  
“ axe of the curve. Now, if the architect  
“ should wish to change the density of his  
“ materials in the required proportion, we know  
“ not what materials he could use; for the  
“ density must always be very great towards  
“ the spring of the arch; and in many cases,  
“ it must be infinitely great. If, on the other  
“ hand, the magnitudes of the voussoirs were  
“ gradually increased, it would be necessary that  
“ those at the spring, and consequently the  
“ abutments should be immensely great, and  
“ often infinite.<sup>(8)</sup>

“ Besides that, the wedges must be cut to  
“ different oblique angles, very difficult in exe-  
“ cution, and totally unsafe when erected,

“ as the acute angles would be in constant danger of flushing off.<sup>(b)</sup>

“ Here too, in real practice, there would be a total want of balance, on account of the mass of masonry and rubble work, which fills the space between the arch and road way.<sup>(c)</sup>

“ But even this is not all ; the archstones cannot be made, (nor indeed ought they) to act as the true mathematical wedge, the properties of which were employed in attempting to establish the equilibrium. The wedge of these theorists is supposed to have its butting sides perfectly polished, and to have its weight or other force on its back balanced by proper equivalent forces acting perpendicularly against those sides. Now this is so far from being the case in the practice of bridge building that architects contrive to have the butting sides of their wedges so rough as to occasion a great deal of friction between them ; and to increase the adhesion of these sides the more, they introduce between them the best and strongest cement they can procure. By these means so far from the arch-stones being kept in their places



“ places only by forces perpendicular to their  
“ butting sides; and having liberty to slide  
“ along those sides, as in the wedge theory,  
“ they are absolutely prevented from the pos-  
“ sibility of so sliding, and in a great measure,  
“ kept in their places in the arch by forces  
“ that act even perpendicular to those which  
“ the wedge theory requires.<sup>(k)</sup>

“ On these accounts then, we conceive  
“ that, however specious and plausible this  
“ theory may appear on paper, it ought not to  
“ be admitted; since it is manifestly inapplica-  
“ ble to any case which can ever occur in  
“ real practice.<sup>(k)</sup>

“ On the contrary, the theory which we  
“ have adopted, or that given by Emerson, in  
“ his fluxions, published in the year 1742,  
“ and which has been so ably and judiciously  
“ handled, by Dr. Hutton in particular, is con-  
“ sistent with nature and with truth. This  
“ theory establishes an equilibrium among all  
“ the vertical pressures of the whole fabric con-  
“ tained between the soffit or underside of the  
“ arch, and the road-way over all. It is now  
“ very generally adopted by the most skilful  
“ engineers and architects, as the only true one;  
“ because it secures a balance in the whole of

“ the ponderating matter, by making an equali-  
 “ ty at every point of the curve, between all  
 “ the adjacent pressures when reduced to the  
 “ tangential directions, or perpendicular to the  
 “ joints, which are supposed to be at right  
 “ angles to the curve of the arch in every part,  
 “ as such structures naturally require them to  
 “ be.<sup>(l)</sup>

“ For, if the joints be \* *not* perpendicu-  
 “ lar to the curve, there will arise a lateral pres-  
 “ sure, whose direction is not along the tangent ;  
 “ which, wanting a force to sustain it, will de-  
 “ stroy the equilibrium, and some of the stones  
 “ will endeavour to fly out.”<sup>(m)</sup>

I shall now proceed to make such remarks on the above quotation as have occurred to me, and which will principally tend to shew that the two theorems are much more alike than the Cyclopædist seems aware of : and this consideration will perhaps enable us to appreciate them both more justly. The letters of reference will lead to the particular paragraphs.

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\* The word *not* is omitted in the Cyclopædia, but the context seems to require it.

(a) What is true with regard to the *lineal arch*, and the *incumbent plane*, will hold equally true and apply justly to the surface of the intrados generated by the horizontal motion of the lineal arch, and also the solid of the incumbent load generated by the incumbent plane. But this does not generate a *solid arch*. A solid arch cannot be generated by *one* motion of a lineal arch. A line put in motion will generate a plane, but that plane must be again put in motion to generate a solid. The paragraph is therefore ambiguous and incorrect, and I think we shall soon be convinced it requires some caution in transferring those properties to a real arch of solid materials.

(b) "A very slender arch rib." This expression is calculated to disparage it unjustly, being incorrect. For the rib need not of necessity be very slender. It may be made as solid as any rib of voussoirs arranged in any other curve. The theorem is imperfect, not because the chain resembles a slender arch rib unfit for a bridge, but because as the writer justly remarks afterwards, it does not advert to the necessary mass of materials laying on the

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(a) b, &c. These letters refer to the preceding quotation. See page 143, and the intermediate pages.

extrados of the voussoirs to fill up the space to the road-way.

(c) There must be some mistake in this position, for according to the definition of a catenarian it is formed by a chain whose links are of equal size and weight; and if arch stones are used instead of iron links, and the position inverted, it follows that the voussoirs should, in like manner, be of equal size and weight; therefore the thickness of the arch, measuring at right angles to the curve, should be equal throughout.

(d) "It is very obvious at first sight that this principle is not consistent with nature." And yet this theorem is very similar to Dr. Hutton's.

(e) "A mere arch." By this, the writer means to insinuate that this theorem looks at the subject as a mere chain of voussoirs; but he overlooks the circumstance that part of the voussoirs may be turned into a perpendicular column, and of course you may diminish the size of the voussoirs, by just so much as you want for the column of masonry to make your road to the required level either horizontal or *ad libitum*.

(f) "As long as the constituent voussoirs had liberty to slide without friction, &c." The writer surely does not mean to say that if  
you



you unite the wedge *more intimately* (either by cement or by joggles, &c. or increase the friction by having rough surfaces) that the equilibration will be thereby destroyed ! Any thing tending to prevent their moving cannot make them move. If they are equilibrated and thereby are disposed to remain at rest, much more will that be the case when their union is assisted by artificial means.

(<sup>8</sup>) It is very true this theory does require an increasing butment as the lower angle of the wedge approaches the *horizontal line*, and when it *coincides* with the horizontal line, then (and then only) it requires an infinite butment. See Fig. 3 and 4. But we find the same fact from Dr. Hutton's theorem : for the perpendicular load (required to sustain his lineal arch in equilibrio) increases from the crown towards the springing, and when the curve ends at right angles to the horizon (or in other words the tangent becomes vertical), the load required is infinite. See Fig. 1 and 2. This objection is therefore no just ground for rejecting Mr. Atwood's theorem, and approving Dr. Hutton's, as it equally applies to both. And the harmony of their results is rather a proof that both theorems are founded in truth. This harmony will

will be further proved by comparing their lines of extrados to a certain extent; till Dr. Hutton's theorem of a lineal arch, and a perpendicular load, curves his line of extrados *upwards*. Whereas, Atwood having a series of wedges has equilibrated them by increasing their lengths. He therefore had no necessity to increase his dimension *upwards*. Although (as we have seen before) he might have applied his additional weight in any other form, and his result would have been exactly similar.

(b) Atwood's theory does not necessarily require that the wedges be cut to different oblique angles. It may or it may *not* be done (at the option of the architect). Atwood very clearly gives the rules for two statical problems; and which he has illustrated by two models. Fig. 3 and 4. First, having the angles of all the sections given, and the weight of the highest or middle section, he teaches to determine the weight of all the other sections. Second, having the weight of all the sections given, and the angle of the highest or middle section, he teaches to determine the angles of all the remaining sections.—The architect therefore has an option which Dr. Hutton's system does not allow. The latter indeed we have  
seen

seen above, does not attend to the voussoirs at all.

(<sup>1</sup>) This appears to be another misapprehension of the writer, for Atwood expressly says, "rules are given for establishing the equilibrium by adjusting the angles of the sections to their several weights, *including the weights of the columns superincumbent.*"

(<sup>2</sup>) I have already remarked, these extraneous advantages will not make Mr. Atwood's arch defective, and therefore cannot be objected to his theorem, as a theorem. And if we are to reject Atwood's theorem because, "however specious and plausible it may appear on paper, it is manifestly inapplicable in any case which can ever occur in real practice," we must equally reject Dr. Hutton's theorem as it is also manifestly different from real practice. Indeed by a mere practical man, Atwood's theorem would be preferred, as he gives a real arch and exemplifies it by a real model, and the experiments and theorem are said perfectly to agree. Whereas Dr. Hutton's theorem is scarcely capable (as a lineal arch) of being exemplified by model or practice.

(<sup>3</sup>) Dr. Hutton in detailing his theorem, nowhere says a word on the joints of the voussoirs

soirs being at right angles to the curve. In his dictionary of terms, under the word *voussoir*, he directs that their joints should be cut perpendicular to the curve of the intrados. He also says in the same place that the *voussoirs* should increase in size from the crown all the way down to the impost; the more they increase the better, as they will the better bear the great weight which rests upon them without being crushed, and also will bind the better together. This latter part is another incidental proof of the harmony between Dr. Hutton's and Mr. Atwood's theorems, so far from there being any contrariety or opposition in their results. But as the dictionary forms no part of Dr. Hutton's theorem, if the form of the joints were *essential* to it, it was incumbent on him to *insist* upon it; to shew the necessity of it and the effect of a contrary arrangement. But the fact is, as we have already abundantly seen, his arch is a *lineal* arch, *not* a substantial one.

(<sup>m</sup>) Mr. Atwood's model, No. 2, (see fig. 4.) demonstrates experimentally the absolute falsity of the above prognosticated effect of changing the angle of the *voussoirs*. There are also many instances where this practice has been adopted. And in judicious hands and under peculiar



peculiar circumstances it may be applied with perfect safety and probable advantage. It is frequently used to assist in supporting and directing the lateral pressure upon butment piers. Where the material is friable it must be admitted the acute angle would be liable to flush off; and as far as that method is used it is similar to what workmen term gathering over: and that part of the voussoir beyond the tangential line must be considered as acting in the manner of a corbel supporting a projection; this therefore completely resolves itself into a practical question, and if the material is sufficiently hard not to flush off, the equilibration will not be the less perfect, by the direction of the joints; provided that direction is taken into account in the adjustment of the equilibrium, which is the case in Atwood's theory.

In comparing these two theorems we must be struck with their coincidence in this respect; that as the tangent approaches the vertical direction, they each require an infinite support. But from their different mode of treating the subject, one requires an infinite perpendicular load, and the other an infinite horizontal buttment.

Had Dr. Hutton in his theorem, adverted  
to

to the thickness of the voussoirs and the direction of the arch joints, the harmony of the two theorems would have been still more apparent as the inclination of the joints of the voussoirs would throw off, to a greater distance, the inflection of the curve of the extrados. And this is the more important as the inflection of the curve and its approximation to a horizontal line (or at least a line convenient for the roadway), is made the criterion of judging of the comparative merit of the different forms for the arches of a bridge; so much so, that flat segments are recommended in preference to a larger portion of the curve as stronger, in direct contradiction to the position given elsewhere by the same author, that "the higher an arch is "in proportion to its span the stronger it is." A contradiction of this sort in an author, ought to make us pause before we venture to call his theorem "*the only true one*;" and we may venture to doubt if that theorem is "generally "adopted by the most skilful architects and engineers."

The Cyclopædist, adverting to the curve of the extrados required by Dr. Hutton's theorem for a circular or elliptical arch, remarks, that it sometimes becomes unfit for a road-

road-way; but observes, “ the evil arising from  
“ the inflection of the curve may be obviated  
“ in many cases, by throwing it to a greater dis-  
“ tance by a very simple expedient: for in an  
“ arch of equilibration as N. B. fig. 1, whose  
“ extrados is E. I. K. S. F, since the points at  
“ m, n, o, &c. are kept in equilibrio by the  
“ heights of the wall I m, K n, L o, &c. if  
“ the lines I m, K n, L o, &c. be divided in  
“ a given ratio in i, k, l, &c. the smaller mass  
“ under the new extrados as e, i, k, s, f, will  
“ still secure the equilibrium. Now it is ob-  
“ vious that the lower extrados runs much  
“ farther from the crown than the upper one  
“ before it has a point of inflection: and hence  
“ appears one great advantage arising from the  
“ use of iron in bridges instead of stone. Sup-  
“ pose, for instance, that an arch was to be  
“ constructed having the span A, D, and  
“ height C, B, and that the necessary thick-  
“ ness of a stone arch at the crown was B, S;  
“ here it is plain, that if the road-way were  
“ made, having a practicable slope as S, K, a,  
“ it would fall far below the required extrados  
“ at K, I, E, and consequently, the arch for  
“ want of a sufficient weight over the portion  
“ A, m, n, and an equal portion on the other  
“ side

“ side the vertex, would be in constant danger  
 “ of rising in the haunches. But a bridge  
 “ formed of hollow iron voussoirs would be  
 “ abundantly strong, with far less thickness  
 “ over the crown, as B s; and then the true  
 “ extrados e, i, k, s, f, would, in every part,  
 “ have a proper slope for a road-way; while at  
 “ the same time the structure is in no danger  
 “ of being destroyed for the want of an equili-  
 “ brium in all its parts.”

This recommendation, flowing from attachment to an imperfect theorem, is pregnant with danger, and calculated to destroy that solidity so indispensably requisite in a bridge. For the strength of two bridges of equal width to support extraneous weight, where all the materials are disposed in equilibrium, that is, according to Dr. Hutton, in the best manner possible, will be nearly in proportion to the quantity of materials so employed, and therefore the diminishing the thickness of the crown will proportionately diminish the strength of the bridge.

Each of these theorists contend that the nearer his theory is approached the more perfect and durable will be the edifice. This opinion has been very generally admitted, and other

properties



properties, because not *calculable*, have been wholly left out of the consideration as if their operation was wholly unknown, or as if it was equal in all cases.

Almost every bridge that has been built, is a proof that there are properties in nature as well as resources in art, that assist in the solidity of buildings which these theorems leave quite out of sight. For no semicircular or semi-elliptical arch ever yet built, has had either an infinite horizontal butment, or an infinite perpendicular load over the springing. Practice proves that we may cut off this immense load and fill up the hollow, and yet the bridge will stand and perform all its functions; what then shall we think of that ingenious contrivance at the expense of solidity to throw to a distance the inflection of the curve of the extrados. Practice also proves we may dispense with Mr. Atwood's infinite length of horizontal butment, and yet pass over the crown of the bridge with perfect safety.

The properties of matter alluded to above, are *vis inertiae*, friction, and cohesion; besides the resources of art, as cement, joggles, cramps, &c.

That these properties do not act merely as

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an extraneous advantage to the whole fabric by increasing its solidity, and thereby allowing a reduction of materials in the butment, or weight over the springing; but act throughout the whole and under their own peculiar laws may be thus proved. If they acted uniformly in favor of the structure, you might with equal safety, take away half the butment or half the crown, (see fig. 1, 2, and 3). We know we may with safety take half the butment, but to take away half the crown would be fatal.

That their properties do not act in the ratio of the inclination of the angle of the wedge to the horizontal or vertical line is proved, because if it did the arch might with safety be equally thick from the crown to the springing; which experience shews to be *not* the case.

It appears to me that these properties act somewhat in the following manner.

*Gravity* (or the disposition which matter has to fall perpendicularly, and which it does when unsupported) acts chiefly at the crown of the arch. It is this property alone which has been considered in the theorems of Dr. Hutton and Mr. Atwood, and considered in this point of view the deduction is perfectly just; “ that  
“ the

“ the greatest danger arising from an additional weight is when it is over the crown.” But if we consider the subject under this partial and imperfect view, the danger is, that we may be induced too much to diminish the thickness there, and thereby sacrifice both strength and beauty.

*Vis inertiae* (or the disposition matter has to remain at rest) acts chiefly at the butment, because there it has the best support.

*Friction* acts all through the mass at all the joints, and in proportion to the contiguous surfaces, and is affected also by the weights. It will be different in different materials, as they may be rough or smooth, soft or hard, and least of all in polished surfaces.

*Cohesion* acts throughout the mass and according to the tenacity of the material.

The above properties of matter will not alter the principles of equilibration, but will and do assist in dispensing with it, and a due consideration of them will give a different proportion for the different parts of a bridge to that which results from considering them in reference to one property alone, viz. gravity. And thus the whole fabric may be made stronger, by adding to the slightest part (*i. e.* the

M 2                      crown)

crown) and more convenient and cheap, by diminishing the bulky part (*i. e.* the pier or butment). In other words, by an attention to these properties we shall be enabled with a given quantity of materials, to dispose them in a better form than that required by the theorems of Dr. Hutton or Mr. Atwood.

Although analytic expressions cannot be applied to these powers, they are principles which address themselves to the understanding and the senses; they are capable of being illustrated, both by demonstration and experiment, and therefore, certainly ought not to be excluded when considering the nature of an arch, and the principles upon which depend its stability and permanence. I do not think it would be possible to make any calculations of the force of these powers so as to reduce them to a theorem; but great light might be thrown upon the subject by experiments with models, and still more by attending to the mode in which arches have failed.

By comparing the history of the failure of Pont y Pridd, with the fact of a number of bridges standing whose lines are very different from those required by the theory of equilibration,



tion, it should appear, the slighter the fabric, the more nearly its form must approach the theory required by simple gravity ; and this will also appear just from considering, that the other properties will only exist in proportion to the mass and quantity of materials ; that is, as the quantity of materials is diminished so will the powers of *vis inertiae*, friction, and cohesion be diminished. And where they are least of all, as in *cast-iron* arches, perhaps the theory of equilibration will apply with most advantage : but even here the uncertainty of those theorems is evidently very great, from the varying and contradictory opinions of the mathematicians who were consulted respecting the cast iron arch of 600 feet span, proposed some time back, to be erected in the place of the present London bridge. And again, by the failure of the cast iron arch at Staines, 181 feet span, although built under the direction of the engineer of Sunderland bridge, an ingenious man, and possessing the experience of that structure.

As utility and beauty are requisites in architecture, as well as durability ; it is of consequence to know, that we may with not only

M 3                      safety

safety but advantage, depart from those theorems of equilibration. Fig. 6, is a representation of the arch of Pont y Pridd, equilibrated according to Mr. Atwood's theorem, by increasing the size of the voussoirs. The upper line is the line of extrados required by Dr. Hutton's theorem. In comparing these lines with fig. 5, we shall find that the present actual load over the haunches is somewhat *less* than that required by Mr. Atwood's theorem, and *much less* than that required by Dr. Hutton's theorem.

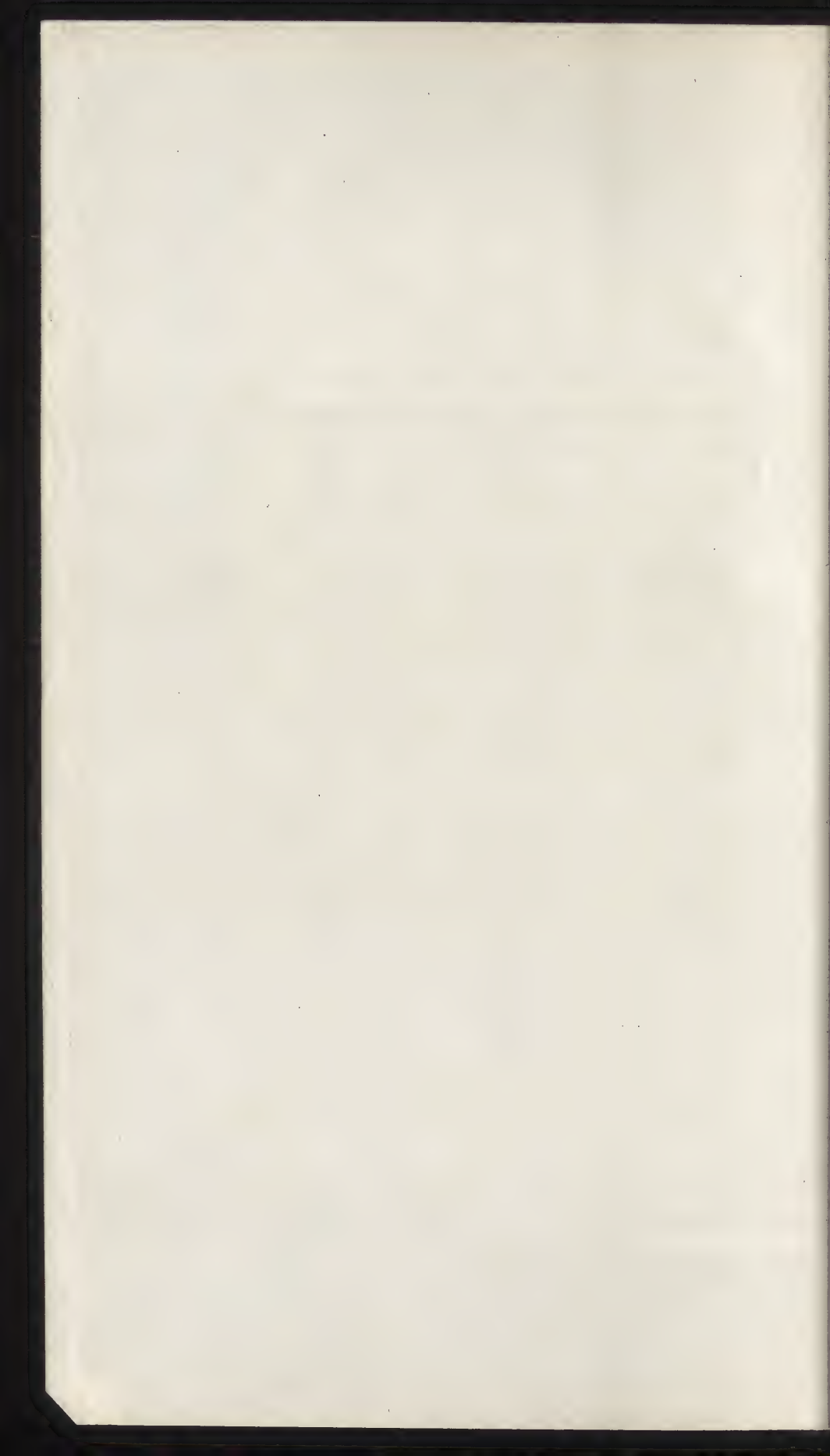
With a given span and rise, the elliptical form will generally be found the most convenient and beautiful for a bridge: it enables the arches to be wider than if semicircles are used, and the haunches are more elevated than in segments of circles, thereby allowing better passage for the craft and water. But when the arch is wholly above the water a segment may be used with equal advantage, and if the rise be very small in proportion to the span, the segment will be most beautiful.

The higher an arch is in proportion to its span (*ceteris paribus*) the stronger it will be, and the flatter it is, the greater will be its lateral pressure.

Circular

Circular arches have oftener failed than elliptical. A circular arch is found to settle most about the haunches, sometimes so much as to become nearly a strait line. The flat oval arches of the Pont de Neuilly settled most at the crown. That part was formed with a circle of 160 feet radius; but when settled it became an arch of a circle of 259 feet radius, rising only 6 inches  $\frac{3}{4}$  in a length of 33 feet. The defect of the second bridge at Pont y Pridd might have been obviated by flattening the top, as well as by introducing the lightening circles in the spandril: and the road over it would have been thereby much better than at present, which is inconveniently steep.

*To be continued.]*





ESSAY  
ON  
FOUNDATIONS.

PART II.\*

By JAMES ELMES.

*Read to the Society on Friday, 29th April, 1808.*

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INTRODUCTION.

HAVING thus quoted the opinions of some architects, whose practical and theoretical knowledge, have procured for them the just distinction of masters in the science, I shall proceed in the first Section of the following essay by way of summary, to collect them to

a

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\* The first part of this essay contained the doctrines of Vitruvius, and the Italian authors quoted at length, but as they are here investigated and can be referred to in the originals, it was thought unnecessary to publish it.

*This portion of the essay contains some  
useful hints, which it is highly  
desirable to see  
the language.*

a focus, which I shall denominate the *ancient practice*. In the second, to narrate my own method in common cases, detailing some difficulties that have occurred, with the methods used to overcome them, and the event of their success. And in the third, a compendium of rules drawn from the above sources, which I shall call the *modern English practice* of forming foundations.

#### SECTION 1.

##### *The Summary of Ancient Practice.*

We observe in all the authorities before cited, without exception, a jealous solicitude towards a knowledge of the component matter of the substrata, more necessary for the volcanic territory of modern Italy, than the more solid and secure soil of Great Britain.

Sir H. Wotton, the only Englishman I have quoted, (because he found it in Palladio and others,) directs wells to be dug to obtain that knowledge, and has given it as a maxim never to be omitted. It is undoubtedly an excellent practice where wells are wanted beforehand; yet, I do not think it so indispensably necessary in this country, as to be performed  
solely

solely for the purpose of investigating an intended foundation, for the most usual and common kind of houses,

Vitruvius, as before observed, very judiciously leaves much to the discretion of the architect, who, if worthy of the name, will be at no loss in accommodating his intentions to the occasion, and his means to the difficulty. This observation, from the reputed father of the profession, proves to my mind, as clear as history, that he was as much an executive as we are certain he was a theoretical architect. Reason would dictate, if Vitruvius did not, that foundation walls should be thicker than those above them; such general observations convey but little information; but he affords something more like certainty as to a minimum, and from which we may draw an inference as to his general practice, when he says, the footings should be thicker by half than the superstructure. As for the depths he determines nothing more, than to dig down to the solid earth. If the ground was weak, swampy, or marshy, he dug it all out and well piled it. In other respects his mode of practice did not sufficiently differ from ours to make it worth recapitulating,

Palladio

Palladio defines the foundation to be that part which is underground, and sustains the whole weight of the edifice; he is therefore justly solicitous that no error should be committed, or defect suffered to escape notice, in this important part of the building. He prefers a natural foundation, or one which, without assistance from art, will sustain the most cumbrous structure in either land or water. He does not essentially differ from Vitruvius (whom he much studied) except in determining the depth of a foundation to be at least, one eighth the height of the wall, and even more when cellars are used; which may then be made of such additional depth as (his translator renders it) to an artful architect may appear necessary. I think if a modern architect was to make such a preposterous footing to a house, a jury of twelve honest men, in spite of that great author's authority, would pronounce him to be really, a very *artful* architect; and one who paid a due regard to the quantum of per centage on his labors, as well as the stability of his edifice. An architect of our own times, in a nutshell full \* of excellent observations,

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\* Nutshells, by Jose Mac Packe.



observations, says, that a little stronger than strong enough, is a good maxim in building: admitted—but as the two extremes of the mean point of strong enough, are errors, that architect is surely to be preferred, who by judicious calculations and attentive study (which should always be recommended to the architectural student) arrives at that desired point; rather than by an overcareful desire of being a little stronger than strong enough, commits a waste of his employer's money, by employing timbers or erecting walls of double or treble the required dimensions. These memoranda are not intended for the medium of that school of architecture, which the above mentioned author pleasantly calls, the St. George's Fields and Mary le bone School of Temple Builders, to whom, as he observes, it would be flat heresy. We need not fear their encroachments on this extreme.

Of building in water Palladio says but little; neither have I been very solicitous to search for the methods used by the old masters on that head; thinking it of sufficient importance for a separate treatise. From his directions for piling a foundation, I take leave to differ in part. He says the length of the pile must be an eighth part of the height of the intended

tended wall, to be erected on it; I cannot allow this to be an invariable maximum. So long as it is driven to the solid, whether it is a fourth or a fourteenth part of the proportion given by Palladio; I conceive it to be the most proper length. He orders the piles to be driven so contiguous to one another, that no others can be set between them; but this is certainly a needless waste; as a due lateral or transverse compression of the soil is better obtained by moderate intervals, than such close ones as to exclude the earth.\* Their diameter was a twelfth part of their length; by which rule a pile 12 feet long must be a foot square. In my opinion a much smaller diameter would be preferable; as every builder knows what an immense weight a perpendicular post or column will sustain, when prevented from leaving its perpendicularity. He preferred repeated gentle blows to violent ones, for driving them, and with reason; he also

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\* In Piranesi and other delineators of the antiquities of Rome, the piling is often represented, so thickly planted, that the soil must have been entirely excavated to admit so many, and thickly driven piles. Vide particularly the foundation of the theatre of Marcellus in the above mentioned engraver's works.

also drove them under the inner or cross walls, which ought never to be omitted when they are to be carried up to the same height, or have heavy partitions or floors to sustain. This architect (Palladio) made his foundation wall twice the thickness of the superincumbent one, (which is a better proportion than that of Vitruvius) and diminished upwards: the ancients, he observes, paved the trench with stone, but in his time they used plank. He also recommends some foundations to be arched, but leaves us in the dark as to the manner.

It would be but repetition to analyse Sir H. Wotton's directions, which are evidently more derived from former authors, than from his own practice; and Alberti's is so similar, except in being more diffuse and mathematical, that I think I may here conclude the summary of ancient practice.\*

SECT.

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\* The quotations made in the first part of this essay and here again referred to, are from Vitruvius, lib. 1. cap. 5. lib. 3. cap. 3. and note by Newton, lib. 5. cap. 3. lib. 6. cap. 11.—Palladio; lib. 1. cap. 7.—Alberti; lib. 3. cap. 2. lib. 3. cap. 3. lib. 3. cap. 5.—Sir Henry Wotton's Elements, and the former part of the Essay.

## SECTION 2.

*The Author's Method of Practice.*

In detailing what I have presumed to call my own method, I trust that instead of being accused of egotism in the too frequent repetition of the personal pronoun *I*, the wish of conveying my information on the subject, will counterbalance the defect.

In that description of houses, which comes more frequently under our direction than royal palaces and splendid mansions, I think the best manner is, to sink the basement story to the intended level; digging the plan of it in every break, as little larger as possible, rather than a large square, that would extend beyond every part of it; because new made earth thrusting against new built walls is to be avoided when possible; and by this means the earth supports itself all round, till the walls are sufficiently dry. Dig the footings upon an average 2 feet 6 inches below the above level, and cut under the perpendicular of the square of the basement story, for the spreading of the footings, for the same reason as before mentioned. If piles are necessary, I should order them to be  
driven



driven upon the before quoted principle of Palladio, with the exceptions I there made. I wish here to take occasion to observe, that I give the preference most decidedly to the engine pulled by ropes and men, to any of the machine pile-drivers yet invented, as the furious heavy thumps, given by the latter, are by no means equal to the continuity and regularity of the former. Sleepers  $2\frac{1}{4}$  times longer than the width of the superincumbent wall, should then be laid across the trench, at intervals not more than 2 feet asunder, to be filled in with brick work, level to the top; but no mortar suffered to touch the timber; sound oak or fir plank should then be laid upon them, well intersected and fastened together at the angles. If fir plank is used and there is any appearance of sap or looseness of texture on the outside, it should be carefully sawed off.

The foundation wall is now to be erected thereon; the method I usually adopt and recommend, is to have the bottom course, if for an external wall, twice the width; and if for an internal or partition wall  $1\frac{1}{2}$  times the width of the superincumbent wall, but invariably to be of equal depths, for if it should be less in depth, (a foot for example,) there will be four

N

joints

joints or nearly 3 inches in common work less to compress or settle than the external walls. Two courses of the above dimension are then to be carried up perpendicularly, and then 2 more courses perpendicularly  $1\frac{1}{2}$  inch on each side less than the lower, and so on *gradatim*, by offsets of  $1\frac{1}{2}$  inch on each side, every two courses, till it arrives at the intended thickness of the wall. The footings must be spread round every break, chimney breast or projection. When the soil is a fine hard gravel or gravel and clay of an equal consistency all round, the piles, sleepers and planking may be entirely omitted. I have tried it on a fine gravelly foundation; on which a very heavy building, the upper part of the walls being in many places 4 bricks thick, has been erected more than four years; and it has neither crack or settlement.

*Some Difficulties detailed.*

In pulling down and rebuilding a house of very large dimensions, in the city, the front of the new house was to be set so far back from the street, that the new foundation stood about 1 foot 3 on the old foundation, and 2 feet 3 on the earth in the inside. Precautions were necessary

cessary to make the new foundation as hard as the original one; it was, therefore, very carefully piled, with intervals of about nine inches, every pile driven by an engine pulled by ropes and men, as far as it could be, and then sawed off level; each pile was shod with iron, rather more obtusely than is generally practised; for it is my opinion, that to keep the piles from splitting, and to break or remove any partial obstruction, is all that is wanting in this operation of shoeing the piles with iron, which is much better effected by these, than with such very lancet-pointed piles as are often used. The foundations were prepared, and the footings laid in the manner I have just now directed. The front both of the basement and ground stories, was to consist of very large openings, and small stone piers; the walls upon the footings were carried up to the level of the bottom of the basement windows, with inverted arches of semi-circles, under every opening; the diameter of which were 18 inches longer than the width of the intended windows over them. When all was levelled, the stone piers were set on the junctions of every arch (according to the diagram)\*,

N 2                      and

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\* Vide plate.



and carried up to the height of the ground-floor arches, and the basement arches inserted afterwards. The front was upon that carried up of brick three very lofty stories ; yet, with all these precautions, the front has receded from top to bottom, nearly three inches. The fact has been accurately ascertained, on the account of an accusation being hinted that sufficient care had not been taken with the foundation ; but it was decided in its favour. Another case I wish to intrude on your time by detailing is, that in preparing the foundation of an intended warehouse for the heaviest description of goods, two large and deep cesspools of old privies were found under the bottom planking of the old foundation : they were too large to admit of arches being turned completely over them, as the upper surface of the arch, if constructed properly, would have risen too high for the windows of the basement story, and it was deemed imprudent to trust to planking laid across as before, the old building having been only dwellings. Four piles wide across the foundation were therefore well driven at the extremities of each hole, the extreme width of the trench ; and squares of piles, about three wide and four across, were driven as piers, leaving  
openings



openings four feet wide; they were then sawed off level, capped with a large stone, a pier brought upon each, and flat arches turned from one to the other, the whole length of the foundation. This has completely answered the purpose; for the superstructure is perfectly free from any appearance of partial settlement, though it has been heavily loaded three or four years. This method would be a more economical way of piling a foundation, where it is necessary, than the common way of driving them thick set, as nearly five-sixths of the piles and labour of driving might be saved; and when the spandrels between the arches were levelled up to their crowns, it might be sleepered and planked if wished, in the manner of a good foundation, or the insistent walls erected on them without. I shall certainly again adopt it on the next occasion that such a case comes under my direction.\*

*On Brick-bond in Foundations.*

A more important point cannot be well  
N 3 conceived

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\* I have again tried it and with equal success. April 1810.  
J. E.

conceived than the necessity of a proper observance of bond (as the workmen term it) in the foundation ; as every previous caution and care may be entirely frustrated by a negligent or bad method of laying or bonding the bricks, although it is of prime necessity in every story of the building ; and as I have paid considerable attention to this point, I trust the following remarks, which shall be as brief as possible, may not be deemed intrusive or misplaced.

In every two perpendicular courses of the footings according to the before mentioned manner of construction, I would have the lower one laid stretching or longitudinally, and the upper one heading or transversely : by this method two inches of the brick is uncovered, and  $6\frac{1}{2}$  inserted, under the solidity of the next two courses, and the superincumbent wall ; but if it is reversed by carelessness, for it is no additional trouble, and the stretching course is uppermost, then 2 inches is, as before uncovered, and only  $2\frac{1}{4}$  covered by the next two courses, and no part of it whatever compressed by the solidity of the walls. The insistent weight in this case hoists the uninserted part of the brick upwards, and removes the intended weight from the extremity of the footing to the perpendicular

pendicular line of the wall: rendering the spreading part of the footings of no avail. I have seen instances of this, and can, if required, point them out. Instead of laying the bricks in the interior of the wall or filling it in, (as it is generally called) after the external courses are laid, directly across the wall, they should be laid alternately, diagonally, transversely, and diagonally the contrary way: filling in the interstices next the outside courses with such pieces of brick as always surround a brick heap in a building: each course to be grouted with a grout composed of the mortar used in the works (which I presuppose to be of good lime and sharp river sand) and water. A small additional expense is only thereby created, and it is much superior in quality as a cement, as well as less expensive, than a grout made of fresh lime alone and used hot, which invariably shrinks from the brick; as the examining a dislocated gaged arch will fully convince.

The next observation militates so completely against the usual method of practice, that were I not fully convinced of the dangerous tendency of the old method, I should apolo-

gize for attempting to deviate from a practice as old as any brick work I have ever yet seen.

It is well known that in the coins of all buildings, a brick laid at the angle is heading one way and stretching the other; and that in the same level one course lays with the leading or coin brick heading, and the other stretching. To prevent the joint of the next course from coming directly upon that of the lower, a piece of brick  $2\frac{1}{4}$  wide is laid next to the header, and called a closer. This is what I would alter, at least below ground, or where a supposed beauty of appearance is not preferred to real strength. My objection is this; it is usual to lay at the angle a brick heading, next to it a closer, then a continuation of bricks heading: then, in the next course to lay over it a brick stretching, that reaches to half the first heading brick next the closer, so far all appears right, but in the filling in all headers are laid which makes them all upright joints inside the wall, as I have found by running a rod three or four feet down the middle of the wall without a brick to interfere till a larger or smaller sized brick breaks them; but it happens invariably so at the angles where it ought to be strongest. The remedy I would propose, though it might at first look unsightly,  
but



but which is no objection, is to lay the closer immediately at the angle, and then the headers adjoining, and reversing it pursue the same mode for the return wall the other way, or else to set the angle brick half out or half in the wall, in alternate courses in each face of the two walls which will produce the same effect and save labor and waste of cutting bricks. Now I am on the subject of brick-bond, I will take the opportunity of hinting at another very common, but fatal error, committed by workmen. At the upright coin of a brick and half wall, or pier, it is also usual to lay the closer next the header on both sides of the wall, and by so doing the bricks are joint upon joint all the length of the wall, except a  $\frac{3}{4}$  brick happens to intervene. It is needless to expatiate on what unsound work this must produce, or the consequences, if part of the foundation is softer than the other a complete separation must ensue, as it is only on the face that a fictitious bond is observed. To remedy which defect, and make the wall much stronger, lay a header and closer in the heading course, and a whole brick in the stretching course on one side, and  $\frac{3}{4}$  of a brick in the stretching course, and all headers and no closer in the heading course on the

the

the other. I have endeavoured to render this more clear by two diagrams, one of the usual and the other of the proposed method. A and B in both figures represent a brick and half wall, having an upright coin at A and a tooth-ing at B, the black lines represent a course of bricks, and the dotted another course laid upon or under it: the dotted lines nearest the scale in both diagrams are stretching courses, and the black lines heading courses, and *vice versa*. Fig. 1. shews the usual manner, and Fig. 2. the proposed way. I would in the angles as well as in the other parts fill in the inner courses alternately, diagonally, transversely, and diagonally the contrary way.

*Of Chimney Breasts, Bows, and other Projections.*

In preparing the foundations for the foot-ings of chimney breasts, semicircular, or mul-tangular, bows, or other projections, inwards, or outwards, from the face of the wall; it is much the best way to prepare them, so that the foundation from the wall to the point or line farthest from the face should be progressively raised from the wall outwards, in proportion to  
the

the height it is to be carried, or the solidity of the work; that in settling, it may approach nearer to a level, or if it does not it appears sounder to the eye as well as being so in fact, to have it rather mounting upwards than dipping downwards and separating from the wall as it infallibly would, without such precaution.

*Precaution.*—The architect to whom I am indebted for initiation into the first rudiments of my professional knowledge, directed a semi-octangular bow of great size that was to be built in lieu of a portion of the rear front that was taken down from an extraordinary sound, and well built house, to be kept two inches out of a level from the wall to the extremity of the bow; the indents to be cut very upright and well plastered, and to be worked with great care and precision. The result was equal to his expectations, the bow settled nearly to a level, and looks, though finished above twenty years, as if it had been originally erected with the house: the points are upright, and neither crack or separation of new from old can be perceived, although the facias, and gaged work cornices, of the old front, are worked all round the bow, and mitred at each extremity to the old work.



## SECTION 3.

*Compendium of Rules, or the modern English Practice—the Result of the foregoing Essay.*

I must in beginning this section once more deprecate your severity, in thinking me presumptuous or dictatorial in calling this the modern English practice of forming foundations. And at the same time request your assistance in making such amendments or additions to the scheme as in your judgments may appear necessary.

*I distinguish the trench from the brick-work or masonry by calling one the foundation, and the other the footings and insistent walls.*

Observation 1.—The foundation <sup>should</sup> ~~must~~ be truly level, transversely and longitudinally.

*same depth* 2.—The interior <sup>and</sup> ~~or~~ partition walls, must be <sup>of the</sup> as low as the exterior, or main walls, ~~which~~ <sup>and</sup> are also to be of one uniform level.

*every* 3.—Inverted arches should be turned under all openings in buildings of ~~any~~ considerable size.

4.—The foundation must be well prepared, <sup>either</sup> by ramming, piling, <sup>steps, or</sup> planking, <sup>or otherwise</sup> according to the necessity of the case, <sup>or all of these,</sup>

5.—Foundations and footings of chimney breasts,



*and other*  
breasts, bows, projections, ~~etc.~~ should be made to rise progressively from the face of the wall outwards.

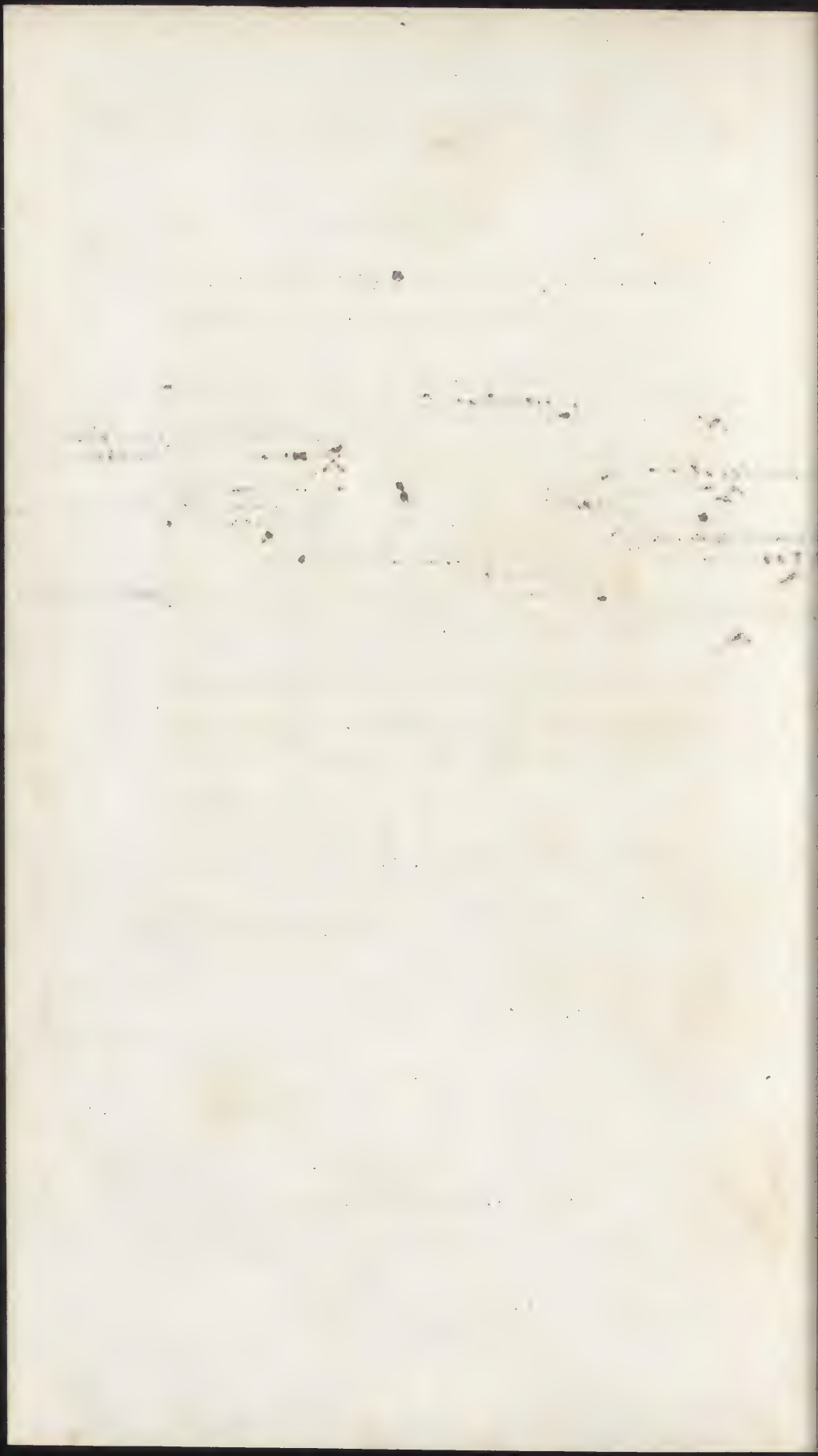
6.— ~~The footings to external and internal main walls, or such as are to be carried up, more than two entire stories are to be twice as thick as the insistent wall and partition walls, or such as are to be of only one story~~ *Every main wall, which is to be carried up more than two entire stories should have a footing wide as the thickness of the wall.* *or such as are to be of only one story should have a footing 1½ times the said thickness of the wall.*  
7.— ~~New made earth should not be laid against new built walls.~~ *to be traversed*

I wish this last section to be considered as open for further amendment, consideration, and alteration, therefore request the favor of any communication on the subject, the result of practice, or scientific inquiry; from the members of the society, or the profession at large.

JAMES ELMES.

9, Tavistock Place,  
Russell Square.

THE END.



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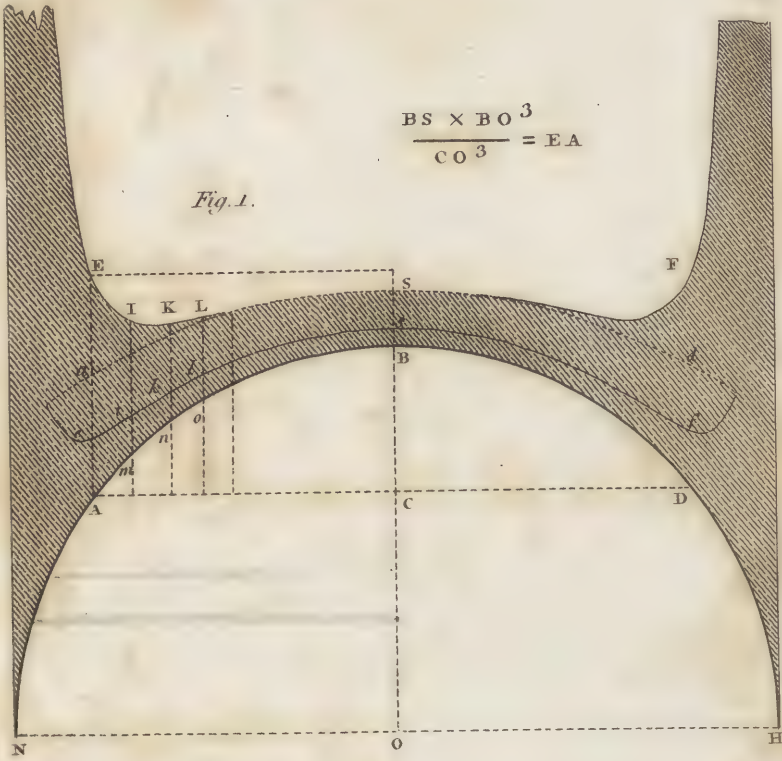
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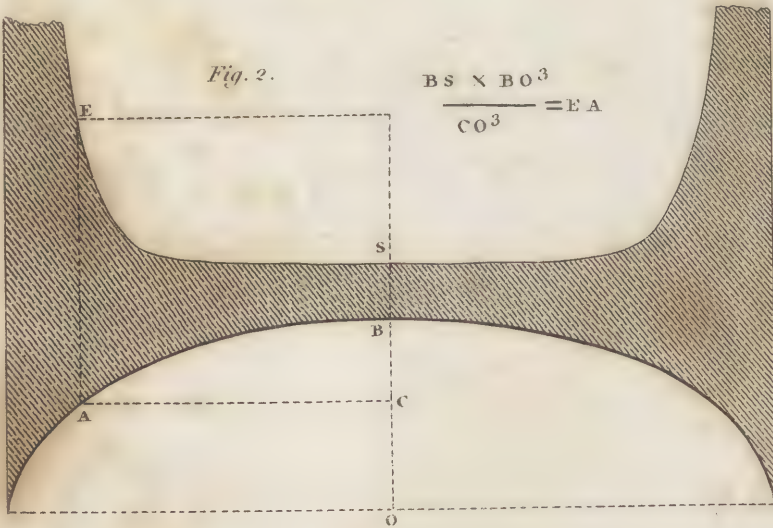
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Fig. 1.



$$\frac{BS \times BO^3}{CO^3} = EA$$

Fig. 2.





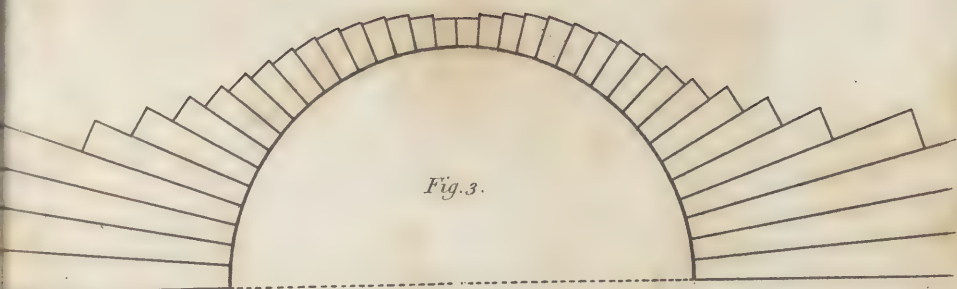


Fig. 3.

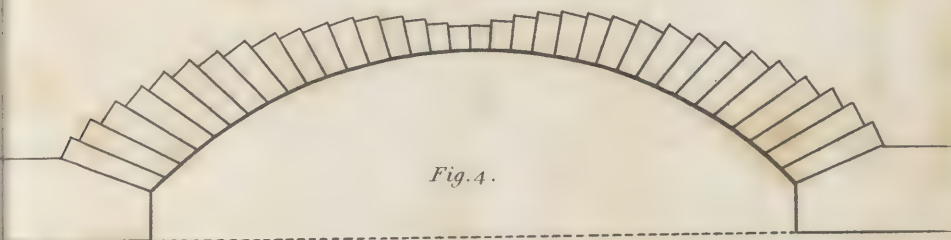


Fig. 4.

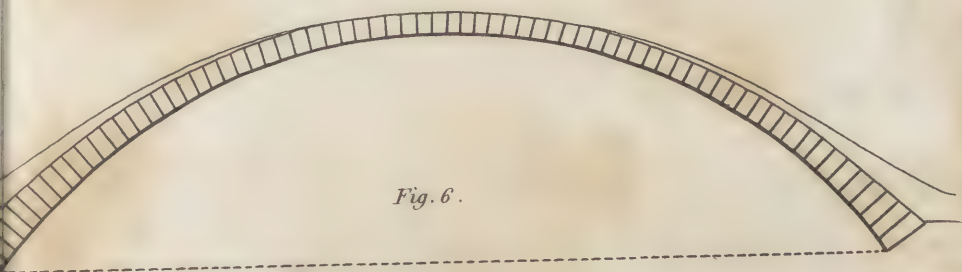


Fig. 6.







*Cent y pidd, over the Tawe near Pantressant in Glamorganshire, built 1755.*

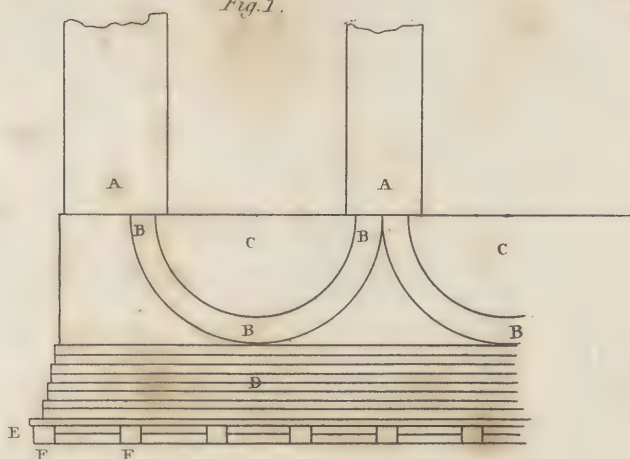
by the REV<sup>d</sup> WILLIAM EDWARDS, Architect.

*Chord 140, Feet, Versed Sine 35 Feet. The first use of Lightening Circles in the Spandrels.*

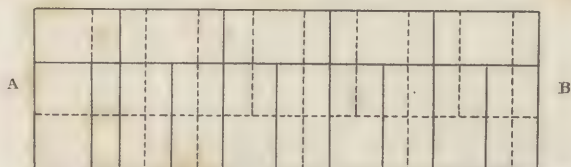
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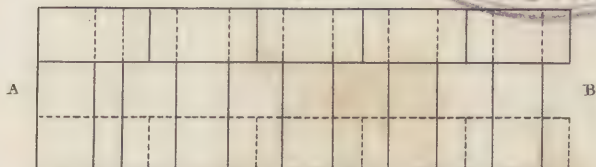
*Fig. 1.*



*Fig. 2.*

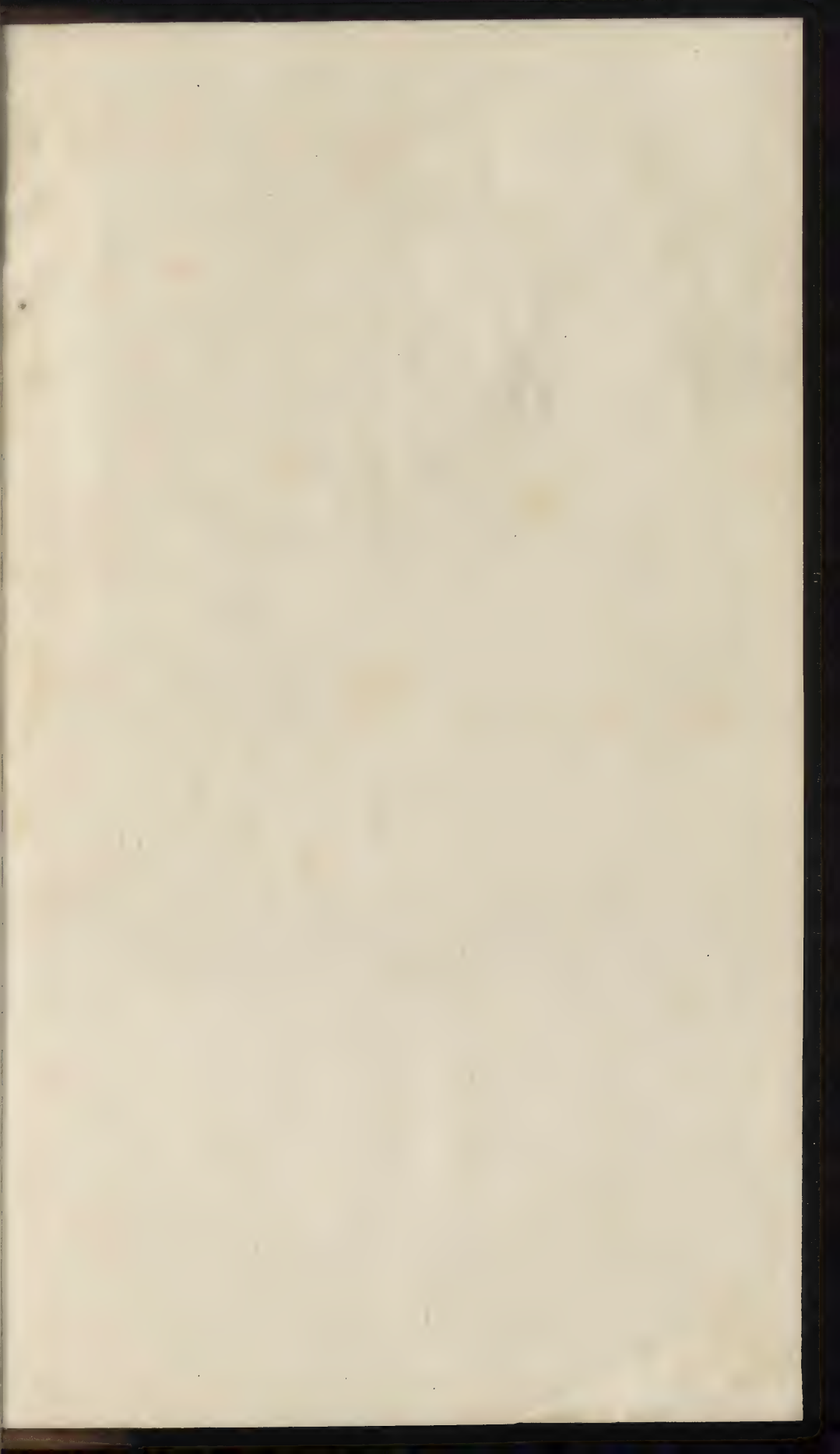


*Fig. 3.*









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